



SEQUENCE LISTING

<110> ANDERSEN, Peter
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FLORIO, Walter

<120> NUCLEIC ACIDS FRAGMENTS AND POLYPEPTIDE FRAGMENTS
DERIVED FROM M. TUBERCULOSIS

<130> 670001-2002.1A

<140> 10/620,246
<141> 2003-07-15

<150> 09/050,739
<151> 1998-03-30

<150> 0376/97
<151> 1997-04-02

<150> 1277/97
<151> 1997-11-10

<150> 60/044,624
<151> 1997-04-18

<150> 60/070,488
<151> 1998-01-05

<150> 10/138,473
<151> 2002-05-02

<150> 09/791,171
<151> 2001-02-20

<150> 09/415,884
<151> 1999-10-08

<150> 60/116,673
<151> 1999-01-21

<150> 1281/98
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<160> 173

<170> PatentIn Ver. 2.0

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<213> Mycobacterium tuberculosis

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Ala Val Glu Gln Ala Ala Leu Gln Ser Ala Trp Gln Gly Asp Thr Gly
35 40 45
Ile Thr Tyr Gln Ala Trp Gln Ala Gln Trp Asn Gln Ala Met Glu Asp
50 55 60
Leu Val Arg Ala Tyr His Ala Met Ser Ser Thr His Glu Ala Asn Thr
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Met Ala Met Met Ala Arg Asp Thr Ala Glu Ala Ala Lys Trp Gly Gly
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<212> DNA
<213> Mycobacterium tuberculosis

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gcgccgggct ggtcgttctg gatggcaccg tcttgccga actcgaagcc gagggctggg 240
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accgcatccg ggtggtgatg tccgtgcctg cggaaacgcga agactgggcg cgcacccatc 360
gcgacctcat tgccggagaa atcttggcta ccgacttcga attcgccgac ctcgccgatg 420
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<212> PRT
<213> Mycobacterium tuberculosis

<400> 4

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35 40 45
Gly Leu Asp Val Ser Asp Arg Ile Arg Val Val Met Ser Val Pro Ala
50 55 60
Glu Arg Glu Asp Trp Ala Arg Thr His Arg Asp Leu Ile Ala Gly Glu
65 70 75 80
Ile Leu Ala Thr Asp Phe Glu Phe Ala Asp Leu Ala Asp Gly Val Ala
85 90 95
Ile Gly Asp Gly Val Arg Val Ser Ile Glu Lys Thr
100 105

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<211> 889

<212> DNA

<213> Mycobacterium tuberculosis

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<211> 162

<212> PRT

<213> Mycobacterium tuberculosis

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Leu Asp Ala Pro Ala Gln Ala Gly Thr Glu Ser Ala Val Ser Gly Val
 35 40 45
 Glu Gly Leu Pro Pro Gly Ser Ala Leu Leu Val Val Lys Arg Gly Pro
 50 55 60
 Asn Ala Gly Ser Arg Phe Leu Leu Asp Gln Ala Ile Thr Ser Ala Gly
 65 70 75 80
 Arg His Pro Asp Ser Asp Ile Phe Leu Asp Asp Val Thr Val Ser Arg
 85 90 95
 Arg His Ala Glu Phe Arg Leu Glu Asn Asn Glu Phe Asn Val Val Asp
 100 105 110
 Val Gly Ser Leu Asn Gly Thr Tyr Val Asn Arg Glu Pro Val Asp Ser
 115 120 125
 Ala Val Leu Ala Asn Gly Asp Glu Val Gln Ile Gly Lys Phe Arg Leu
 130 135 140
 Val Phe Leu Thr Gly Pro Lys Gln Gly Glu Asp Asp Gly Ser Thr Gly
 145 150 155 160
 Gly Pro

<210> 7
 <211> 898
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 7
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 cacacaccgc acagattagg acacgccggc ggcgagccc tgcccgaag accgtgcacc 180
 ggtcttgga gactgtgccc atggcacaga taaccctgcg aggaaacgcg atcaataaccg 240
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<210> 8
 <211> 165
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 8
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Asp Leu Gly Val Ile Ser Ser Asp Gln Phe Arg Gly Lys Ser Val Leu			
35	40	45	
Leu Asn Ile Phe Pro Ser Val Asp Thr Pro Val Cys Ala Thr Ser Val			
50	55	60	
Arg Thr Phe Asp Glu Arg Ala Ala Ala Ser Gly Ala Thr Val Leu Cys			
65	70	75	80
Val Ser Lys Asp Leu Pro Phe Ala Gln Lys Arg Phe Cys Gly Ala Glu			
85	90	95	
Gly Thr Glu Asn Val Met Pro Ala Ser Ala Phe Arg Asp Ser Phe Gly			
100	105	110	
Glu Asp Tyr Gly Val Thr Ile Ala Asp Gly Pro Met Ala Gly Leu Leu			
115	120	125	
Ala Arg Ala Ile Val Val Ile Gly Ala Asp Gly Asn Val Ala Tyr Thr			
130	135	140	
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145	150	155	160
Ala Ala Leu Gly Ala			
165			

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 <213> Mycobacterium tuberculosis

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<211> 217
<212> PRT
<213> Mycobacterium tuberculosis

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Asp Pro Cys Ser Asp Ile Ala Val Val Phe Ala Arg Gly Thr His Gln
35 40 45
Ala Ser Gly Leu Gly Asp Val Gly Glu Ala Phe Val Asp Ser Leu Thr
50 55 60
Ser Gln Val Gly Gly Arg Ser Ile Gly Val Tyr Ala Val Asn Tyr Pro
65 70 75 80
Ala Ser Asp Asp Tyr Arg Ala Ser Ala Ser Asn Gly Ser Asp Asp Ala
85 90 95
Ser Ala His Ile Gln Arg Thr Val Ala Ser Cys Pro Asn Thr Arg Ile
100 105 110
Val Leu Gly Gly Tyr Ser Gln Gly Ala Thr Val Ile Asp Leu Ser Thr
115 120 125
Ser Ala Met Pro Pro Ala Val Ala Asp His Val Ala Ala Val Ala Leu
130 135 140
Phe Gly Glu Pro Ser Ser Gly Phe Ser Ser Met Leu Trp Gly Gly Gly
145 150 155 160
Ser Leu Pro Thr Ile Gly Pro Leu Tyr Ser Ser Lys Thr Ile Asn Leu
165 170 175
Cys Ala Pro Asp Asp Pro Ile Cys Thr Gly Gly Gly Asn Ile Met Ala
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His Val Ser Tyr Val Gln Ser Gly Met Thr Ser Gln Ala Ala Thr Phe
195 200 205
Ala Ala Asn Arg Leu Asp His Ala Gly
210 215

<210> 11
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<212> DNA
<213> Mycobacterium tuberculosis

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<212> PRT

<213> Mycobacterium tuberculosis

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Asn His Ala Pro Lys Thr Val Ala Asn Phe Val Gly Leu Ala Gln Gly
      35              40             45

Thr Lys Asp Tyr Ser Thr Gln Asn Ala Ser Gly Gly Pro Ser Gly Pro
      50              55             60

Phe Tyr Asp Gly Ala Val Phe His Arg Val Ile Gln Gly Phe Met Ile
      65              70             75             80

Gln Gly Gly Asp Pro Thr Gly Thr Gly Arg Gly Gly Pro Gly Tyr Lys
      85              90             95

Phe Ala Asp Glu Phe His Pro Glu Leu Gln Phe Asp Lys Pro Tyr Leu
      100             105             110

Leu Ala Met Ala Asn Ala Gly Pro Gly Thr Asn Gly Ser Gln Phe Phe
      115             120             125

Ile Thr Val Gly Lys Thr Pro His Leu Asn Arg Arg His Thr Ile Phe
      130             135             140

Gly Glu Val Ile Asp Ala Glu Ser Gln Arg Val Val Glu Ala Ile Ser
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Glu Ser Ile Thr Ile Ser
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<210> 13
<211> 1060
<212> DNA
<213> Mycobacterium tuberculosis

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<211> 219
<212> PRT
<213> Mycobacterium tuberculosis

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35 40 45
Pro Gly Ile Gly Thr Val Gly Asn Ala Phe Val Ser Ala Leu Arg Ser
50 55 60
Lys Val Asn Lys Asn Val Gly Val Tyr Ala Val Lys Tyr Pro Ala Asp
65 70 75 80
Asn Gln Ile Asp Val Gly Ala Asn Asp Met Ser Ala His Ile Gln Ser
85 90 95
Met Ala Asn Ser Cys Pro Asn Thr Arg Leu Val Pro Gly Gly Tyr Ser
100 105 110
Leu Gly Ala Ala Val Thr Asp Val Val Leu Ala Val Pro Thr Gln Met
115 120 125
Trp Gly Phe Thr Asn Pro Leu Pro Pro Gly Ser Asp Glu His Ile Ala

130	135	140
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145	150	155 160
Asn Phe Ser Pro Ala Tyr Asn Asp Arg Thr Ile Glu Leu Cys His Gly		
	165	170 175
Asp Asp Pro Val Cys His Pro Ala Asp Pro Asn Thr Trp Glu Ala Asn		
	180	185 190
Trp Pro Gln His Leu Ala Gly Ala Tyr Val Ser Ser Gly Met Val Asn		
	195	200 205
Gln Ala Ala Asp Phe Val Ala Gly Lys Leu Gln		
210	215	

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 <211> 1198
 <212> DNA
 <213> Mycobacterium tuberculosis

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 <211> 265
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 16
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 35 40 45
 Ala Val Ser Thr Gly Arg Leu Ile Asp Val Lys Ala Pro Thr Asn Gly
 50 55 60
 Val Ile Ala His Leu Arg Ala Ser Lys Pro Leu Val Arg Leu Arg Val
 65 70 75 80
 Pro Phe Thr Leu Ser Arg Asn Glu Ile Asp Asp Val Glu Arg Gly Ser
 85 90 95
 Lys Asp Ser Asp Trp Glu Pro Val Lys Glu Ala Ala Lys Lys Leu Ala
 100 105 110
 Phe Val Glu Asp Arg Thr Ile Phe Glu Gly Tyr Ser Ala Ala Ser Ile
 115 120 125
 Glu Gly Ile Arg Ser Ala Ser Ser Asn Pro Ala Leu Thr Leu Pro Glu
 130 135 140
 Asp Pro Arg Glu Ile Pro Asp Val Ile Ser Gln Ala Leu Ser Glu Leu
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 Arg Leu Ala Gly Val Asp Gly Pro Tyr Ser Val Leu Leu Ser Ala Asp
 165 170 175
 Val Tyr Thr Lys Val Ser Glu Thr Ser Asp His Gly Tyr Pro Ile Arg
 180 185 190
 Glu His Leu Asn Arg Leu Val Asp Gly Asp Ile Ile Trp Ala Pro Ala
 195 200 205
 Ile Asp Gly Ala Phe Val Leu Thr Thr Arg Gly Gly Asp Phe Asp Leu
 210 215 220
 Gln Leu Gly Thr Asp Val Ala Ile Gly Tyr Ala Ser His Asp Thr Asp
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 260 265

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<220>

<221> VARIANT

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<223> Ala is Ala or Ser

<220>

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<213> Mycobacterium tuberculosis

<400> 18

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<220>

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<223> Xaa is unknown

<400> 19

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<210> 20

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<212> PRT

<213> Mycobacterium tuberculosis

<400> 20

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1				5					10					15

<210> 21

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<213> Mycobacterium tuberculosis

<220>

<221> UNSURE

<222> (2)

<223> Xaa is unknown

<400> 21

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<220>
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<222> (1)
<223> Xaa is unknown

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<222> (2)
<223> Ile is Ile or Val

<220>
<221> VARIANT
<222> (10)
<223> Val is Val or Thr

<220>
<221> VARIANT
<222> (11)
<223> Val is Val or Phe

<220>
<221> VARIANT
<222> (14)
<223> Asp is Asp or Gln

<400> 22
Xaa Ile Gln Lys Ser Leu Glu Leu Ile Val Val Thr Ala Asp Glu
1 5 10 15

<210> 23
<211> 19
<212> PRT
<213> Mycobacterium tuberculosis

<400> 23
Met Asn Asn Leu Tyr Arg Asp Leu Ala Pro Val Thr Glu Ala Ala Trp
1 5 10 15

Ala Glu Ile

<210> 24
<211> 34
<212> DNA
<213> Mycobacterium tuberculosis

<400> 24
cccggctcga gaacctstac cgcgacctsg csc

<210> 25
 <211> 37
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 25
 gggccggatc cgasgcs gcg tccttsacs gytgcca 37

 <210> 26
 <211> 28
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 26
 ggaagcccca tatgaacaat ctctaccg 28

 <210> 27
 <211> 32
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 27
 cgcgctcagc ccttagtgac tgagcgcgac cg 32

 <210> 28
 <211> 24
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 28
 ctcgaattcg ccgggtgcac acag 24

 <210> 29
 <211> 25
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 29
 ctcgaattcg ccccatatcg agaac 25

 <210> 30
 <211> 15
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 30
 gtgtatctgc tggac 15

 <210> 31
 <211> 15
 <212> DNA
 <213> Mycobacterium tuberculosis

 <400> 31
 ccgactggct ggccg 15

<210> 32	
<211> 24	
<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 32	
gaggaattcg cttagcggat cgca	24
<210> 33	
<211> 15	
<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 33	
cccacattcc gttgg	15
<210> 34	
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<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 34	
gtccagcaga tacac	15
<210> 35	
<211> 27	
<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 35	
gtacgagaat tcatgtcgca aatcatg	27
<210> 36	
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<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 36	
gtacgagaat tcgagcttgg ggtgccg	27
<210> 37	
<211> 28	
<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 37	
cgattccaag cttgtggccg ccgacccg	28
<210> 38	
<211> 30	
<212> DNA	
<213> Mycobacterium tuberculosis	
<400> 38	
cgttagggat cctcatcgcc atgggtgttgg	30
<210> 39	

<211> 26
<212> DNA
<213> Mycobacterium tuberculosis

<400> 39
cgttagggat ccggttccac tgtgcc 26

<210> 40
<211> 28
<212> DNA
<213> Mycobacterium tuberculosis

<400> 40
cgttagggat cctcaggtct tttcgatg 28

<210> 41
<211> 952
<212> DNA
<213> Mycobacterium tuberculosis

<400> 41
gaattcgccg ggtgcacaca gccttacacg acggaggtgg acacatgaag ggtcggtcgg 60
cgctgctgcg ggcgctctgg attgccgcac tgtcattcgg gttgggcggg gtcgcggtag 120
ccgcggaacc caccgccaag gccgccccat acgagaacct gatggtgccg tcgccctcga 180
tgggccggga catcccggtg gccttcctag ccggtgggcc gcacgcggtg tatctgctgg 240
acgccttcaa cgccggcccc gatgtcagta actgggtcac cgcgggtaac gcgatgaaca 300
cgttggcggg caaggggatt tcggtggtgg caccggccgg tggcggtac agcatgtaca 360
ccaactggga gcaggatggc agcaagcagt gggacacctt cttgtccgct gagctgcccg 420
actggctggc cgctaaccgg ggcttggccc ccggtggcca tgcggccggt ggcgccgctc 480
agggcggtta cggggcgatg gcgctggcgg ccttccaccc cgaccgcttc ggcttcgctg 540
gctcgatgtc gggctttttg tacccgtcga acaccaccac caacggtgcg atcgcgcgcg 600
gcatgcagca attcggcggg gtggacacca acggaatgtg gggagcacca cagctgggtc 660
ggtggaagtg gcacgacccg tgggtgcatg ccagcctgct ggcgcaaaac aacacccggg 720
tgtgggtgtg gagcccgacc aaccggggag ccagcgatcc cgccgccatg atcggccaaa 780
ccgccgaggc gatgggtaac agccgcatgt tctacaacca gtatcgcagc gtcggcgggc 840
acaacggaca cttcgacttc ccagccagcg gtgacaacgg ctggggctcg tgggcgcccc 900
agctgggcgc tatgtcgggc gatatcgctg gtgcgatccg ctaagcgaat tc 952

<210> 42
<211> 299
<212> PRT
<213> Mycobacterium tuberculosis

<400> 42
Met Lys Gly Arg Ser Ala Leu Leu Arg Ala Leu Trp Ile Ala Ala Leu
1 5 10 15
Ser Phe Gly Leu Gly Gly Val Ala Val Ala Ala Glu Pro Thr Ala Lys
20 25 30
Ala Ala Pro Tyr Glu Asn Leu Met Val Pro Ser Pro Ser Met Gly Arg
35 40 45
Asp Ile Pro Val Ala Phe Leu Ala Gly Gly Pro His Ala Val Tyr Leu
50 55 60
Leu Asp Ala Phe Asn Ala Gly Pro Asp Val Ser Asn Trp Val Thr Ala

65	70					75					80				
Gly	Asn	Ala	Met	Asn	Thr	Leu	Ala	Gly	Lys	Gly	Ile	Ser	Val	Val	Ala
				85					90					95	
Pro	Ala	Gly	Gly	Ala	Tyr	Ser	Met	Tyr	Thr	Asn	Trp	Glu	Gln	Asp	Gly
			100					105					110		
Ser	Lys	Gln	Trp	Asp	Thr	Phe	Leu	Ser	Ala	Glu	Leu	Pro	Asp	Trp	Leu
		115					120					125			
Ala	Ala	Asn	Arg	Gly	Leu	Ala	Pro	Gly	Gly	His	Ala	Ala	Val	Gly	Ala
		130				135					140				
Ala	Gln	Gly	Gly	Tyr	Gly	Ala	Met	Ala	Leu	Ala	Ala	Phe	His	Pro	Asp
145					150				155						160
Arg	Phe	Gly	Phe	Ala	Gly	Ser	Met	Ser	Gly	Phe	Leu	Tyr	Pro	Ser	Asn
				165					170					175	
Thr	Thr	Thr	Asn	Gly	Ala	Ile	Ala	Ala	Gly	Met	Gln	Gln	Phe	Gly	Gly
			180					185					190		
Val	Asp	Thr	Asn	Gly	Met	Trp	Gly	Ala	Pro	Gln	Leu	Gly	Arg	Trp	Lys
		195					200					205			
Trp	His	Asp	Pro	Trp	Val	His	Ala	Ser	Leu	Leu	Ala	Gln	Asn	Asn	Thr
	210					215					220				
Arg	Val	Trp	Val	Trp	Ser	Pro	Thr	Asn	Pro	Gly	Ala	Ser	Asp	Pro	Ala
225					230					235					240
Ala	Met	Ile	Gly	Gln	Thr	Ala	Glu	Ala	Met	Gly	Asn	Ser	Arg	Met	Phe
				245					250					255	
Tyr	Asn	Gln	Tyr	Arg	Ser	Val	Gly	Gly	His	Asn	Gly	His	Phe	Asp	Phe
			260					265					270		
Pro	Ala	Ser	Gly	Asp	Asn	Gly	Trp	Gly	Ser	Trp	Ala	Pro	Gln	Leu	Gly
		275					280					285			
Ala	Met	Ser	Gly	Asp	Ile	Val	Gly	Ala	Ile	Arg					
	290					295									

<210> 43
 <211> 27
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 43
 gcaacacccg ggatgtcgca aatcatg

27

<210> 44
 <211> 27
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 44
gtaacacccg ggggtggccgc cgacccg 27

<210> 45
<211> 37
<212> DNA
<213> Mycobacterium tuberculosis

<400> 45
ctactaagct tggatcccta gccgccccat ttggcgg 37

<210> 46
<211> 38
<212> DNA
<213> Mycobacterium tuberculosis

<400> 46
ctactaagct tccatgggtca ggtcttttcg atgcttac 38

<210> 47
<211> 450
<212> DNA
<213> Mycobacterium tuberculosis

<400> 47
gtgccgcgt ccccaggggt cttatgggtc gatatacctg agtttgatgg aagtccgatg 60
accagcagtc agcatacggc atggccgaaa agagtggggg gatgatggcc gaggatgttc 120
gcgccgagat cgtggccagc gttctcgaag tcgttggtcaa cgaaggcgat cagatcgaca 180
agggcgacgt cgtgggtgctg ctggagtcga tgaagatgga gatccccgtc ctggccgaag 240
ctgccggaac ggtcagcaag gtggcgggtat cgggtgggcca tgtcattcag gccggcgacc 300
ttatcgcggt gatcagctag tcgttgatag tcaactcatgt ccacactcgg tgatctgctc 360
gccgaacaca cggtgctgcc gggcagcgcg gtggaccacc tgcattgcggg ggtcggggag 420
tggcagctcc ttgccgactt gtcgtttgcc 450

<210> 48
<211> 71
<212> PRT
<213> Mycobacterium tuberculosis

<400> 48
Met Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val
1 5 10 15
Val Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu
20 25 30
Leu Glu Ser Met Lys Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly
35 40 45
Thr Val Ser Lys Val Ala Val Ser Val Gly Asp Val Ile Gln Ala Gly
50 55 60
Asp Leu Ile Ala Val Ile Ser
65 70

<210> 49
<211> 750
<212> DNA
<213> Mycobacterium tuberculosis

<400> 49
gggtacccat cgatggggttg cggttcggca ccgaggtgct aacgcacttg ctgacacact 60
gctagtcgaa aacgaggcta gtcgcaacgt cgatcacacg agaggactga ccatgacaac 120
ttcaccgcgac ccgtatgccg cgctgcccga gctgccgtcc ttcagcctga cgtcaacctc 180
gatcaccgat gggcagccgc tggctacacc ccaggtcagc gggatcatgg gtgcgggagg 240
ggcggatgcc agtccgcagc tgagggtggc gggatttccc agcgagaccc gcagcttcgc 300
ggtaaccgtc tacgaccctg atgccccac cctgtccggg ttctggcact gggcgggtggc 360
caacctgcct gccaacgtca ccgagttgcc cgagggtgct ggcatggcc gcgaactgcc 420
gggcggggca ctgacattgg tcaacgacgc cggatgccc cggatgtgg gtgcggcgcc 480
gcctcccggg catggggtgc atcgctacta cgtcgcggta cacgcgggtga aggtcgaaaa 540
gctcgacctc cccgaggacg cgagtcctgc atatctggga ttcaacctgt tccagcacgc 600
gattgcacga gcggtcatct tcggcaccta cgagcagcgt tagcgcttta gctgggttgc 660
cgacgtcttg ccgagccgac cgcttcgtgc agcgagccga acccgccgctc atgcagcctg 720
cgggcaatgc cttcatggat gtccttgccc 750

<210> 50
<211> 176
<212> PRT
<213> Mycobacterium tuberculosis

<400> 50
Met Thr Thr Ser Pro Asp Pro Tyr Ala Ala Leu Pro Lys Leu Pro Ser
1 5 10 15
Phe Ser Leu Thr Ser Thr Ser Ile Thr Asp Gly Gln Pro Leu Ala Thr
20 25 30
Pro Gln Val Ser Gly Ile Met Gly Ala Gly Gly Ala Asp Ala Ser Pro
35 40 45
Gln Leu Arg Trp Ser Gly Phe Pro Ser Glu Thr Arg Ser Phe Ala Val
50 55 60
Thr Val Tyr Asp Pro Asp Ala Pro Thr Leu Ser Gly Phe Trp His Trp
65 70 75 80
Ala Val Ala Asn Leu Pro Ala Asn Val Thr Glu Leu Pro Glu Gly Val
85 90 95
Gly Asp Gly Arg Glu Leu Pro Gly Gly Ala Leu Thr Leu Val Asn Asp
100 105 110
Ala Gly Met Arg Arg Tyr Val Gly Ala Ala Pro Pro Pro Gly His Gly
115 120 125
Val His Arg Tyr Tyr Val Ala Val His Ala Val Lys Val Glu Lys Leu
130 135 140
Asp Leu Pro Glu Asp Ala Ser Pro Ala Tyr Leu Gly Phe Asn Leu Phe
145 150 155 160
Gln His Ala Ile Ala Arg Ala Val Ile Phe Gly Thr Tyr Glu Gln Arg

<210> 51
 <211> 800
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 51
 tcatgagggt catcggggtg atcccacgcc cgcagccgca ttcggggccgc tggcgagccg 60
 gtgccgcacg ccgcctcacc agcctggtgg ccgcgcctt tgcggcggcc acactgttgc 120
 ttacccccgc gctggcacca ccggcatcgg cgggctgccc ggatgccgag gtggtgttcg 180
 cccgcggaac cggcgaacca cctggcctcg gtcgggtagg ccaagctttc gtcagttcat 240
 tgcgccagca gaccaacaag agcatcggga catacggagt caactaccgc gccaacggtg 300
 atttcttggt cgccgctgac ggcgcgaaac acgccagcga ccacattcag cagatggcca 360
 gcgcgtgccg ggccacgagg ttggtgctcg gcggctactc ccagggtgcg gccgtgatcg 420
 acatcgtcac cgccgcacca ctgcccggcc tcgggttcac gcagccgttg ccgcccgcag 480
 cggacgatca catcgcccgcg atcgccctgt tcgggaatcc ctccggccgc gctggcgggc 540
 tgatgagcgc cctgaccctt caattcgggt ccaagacat caacctctgc aacaacggcg 600
 acccgatttg ttcggacggc aaccggtggc gagcgacat aggtacgtg cccgggatga 660
 ccaaccaggc ggcgcgtttc gtcgcgagca ggatctaac cgagccgccc catagattcc 720
 ggctaagcaa cggctgcgcc gccgccggc cagagtgac cgccgccgac tggcacaccg 780
 cttaccacgg ctttatgctg 800

<210> 52
 <211> 226
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 52
 Met Ile Pro Arg Pro Gln Pro His Ser Gly Arg Trp Arg Ala Gly Ala
 1 5 10 15
 Ala Arg Arg Leu Thr Ser Leu Val Ala Ala Ala Phe Ala Ala Ala Thr
 20 25 30
 Leu Leu Leu Thr Pro Ala Leu Ala Pro Pro Ala Ser Ala Gly Cys Pro
 35 40 45
 Asp Ala Glu Val Val Phe Ala Arg Gly Thr Gly Glu Pro Pro Gly Leu
 50 55 60
 Gly Arg Val Gly Gln Ala Phe Val Ser Ser Leu Arg Gln Gln Thr Asn
 65 70 75 80
 Lys Ser Ile Gly Thr Tyr Gly Val Asn Tyr Pro Ala Asn Gly Asp Phe
 85 90 95
 Leu Ala Ala Ala Asp Gly Ala Asn Asp Ala Ser Asp His Ile Gln Gln
 100 105 110
 Met Ala Ser Ala Cys Arg Ala Thr Arg Leu Val Leu Gly Gly Tyr Ser
 115 120 125

Gln Gly Ala Ala Val Ile Asp Ile Val Thr Ala Ala Pro Leu Pro Gly
 130 135 140
 Leu Gly Phe Thr Gln Pro Leu Pro Pro Ala Ala Asp Asp His Ile Ala
 145 150 155 160
 Ala Ile Ala Leu Phe Gly Asn Pro Ser Gly Arg Ala Gly Gly Leu Met
 165 170 175
 Ser Ala Leu Thr Pro Gln Phe Gly Ser Lys Thr Ile Asn Leu Cys Asn
 180 185 190
 Asn Gly Asp Pro Ile Cys Ser Asp Gly Asn Arg Trp Arg Ala His Leu
 195 200 205
 Gly Tyr Val Pro Gly Met Thr Asn Gln Ala Ala Arg Phe Val Ala Ser
 210 215 220
 Arg Ile
 225

<210> 53
 <211> 700
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 53
 ctaggaaagc ctttcctgag taagtattgc cttcgttgca taccgccctt tacctgcgtt 60
 aatctgcatt ttatgacaga atacgaagg cctaagacaa aattccacgc gttaatgcag 120
 gaacagattc ataacgaatt cacagcggca caacaatatg tcgcgatcgc ggtttatttc 180
 gacagcgaag acctgccgca gttggcgaag cattttttaca gccaagcggc cgaggaacga 240
 aaccatgcaa tgatgctcgt gcaaacacctg ctcgaccgcg accttcgtgt cgaaattccc 300
 ggcgtagaca cgggtgcgaaa ccagttcgac agaccccgcg aggcactggc gctggcgctc 360
 gatcaggaac gcacagtcac cgaccaggtc ggtcggctga cagcgggtggc ccgcgacgag 420
 ggcgatttcc tcggcgagca gttcatgcag tggttcttgc aggaacagat cgaagaggtg 480
 gccttgatgg caaccctggg gcgggttgcc gatcggggccg gggccaacct gttcgagcta 540
 gagaacttcg tcgcacgtga agtggatgtg gcgccggccg catcaggcgc cccgcacgct 600
 gccggggggc gcctctagat ccctggcggg gatcagcgag tgggtcccgtt cgcccggccc 660
 tcttcagacc aggccttggt gcggccgggg tggtgagtac 700

<210> 54
 <211> 181
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 54
 Met Thr Glu Tyr Glu Gly Pro Lys Thr Lys Phe His Ala Leu Met Gln
 1 5 10 15
 Glu Gln Ile His Asn Glu Phe Thr Ala Ala Gln Gln Tyr Val Ala Ile
 20 25 30
 Ala Val Tyr Phe Asp Ser Glu Asp Leu Pro Gln Leu Ala Lys His Phe
 35 40 45
 Tyr Ser Gln Ala Val Glu Glu Arg Asn His Ala Met Met Leu Val Gln

50	55	60
His Leu Leu Asp Arg Asp Leu Arg Val Glu Ile Pro Gly Val Asp Thr		
65	70	75 80
Val Arg Asn Gln Phe Asp Arg Pro Arg Glu Ala Leu Ala Leu Ala Leu		
	85	90 95
Asp Gln Glu Arg Thr Val Thr Asp Gln Val Gly Arg Leu Thr Ala Val		
	100	105 110
Ala Arg Asp Glu Gly Asp Phe Leu Gly Glu Gln Phe Met Gln Trp Phe		
	115	120 125
Leu Gln Glu Gln Ile Glu Glu Val Ala Leu Met Ala Thr Leu Val Arg		
	130	135 140
Val Ala Asp Arg Ala Gly Ala Asn Leu Phe Glu Leu Glu Asn Phe Val		
145	150	155 160
Ala Arg Glu Val Asp Val Ala Pro Ala Ala Ser Gly Ala Pro His Ala		
	165	170 175
Ala Gly Gly Arg Leu		
	180	

<210> 55
 <211> 950
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 55
 tgggctcggc actggctctc ccacggtggc gcgctgattt ctccccacgg taggcgttgc 60
 gacgcattgt cttcaccgtc tatccacagc taccgacatt tgctccggct ggatcgcggg 120
 taaaattccg tcgtgaacaa tcgacccatc cgcttgctga catccggcag ggctgggttg 180
 ggtgctggcg cattgatcac cgccgtcgtc ctgctcatcg ccttggggcg tgtttgacc 240
 ccggttgctt tcgccgatgg atgcccggac gccgaagtca cgttcgcccg cggcaccggc 300
 gagccgcccg gaatcgggcg cgttggccag gcgttcgtcg actcgtcgcg ccagcagact 360
 ggcattggaga tcggagtata cccggtgaat tacgccgcca gccgcctaca gctgcacggg 420
 ggagacggcg ccaacgacgc catatcgac attaagtcca tggcctcgtc atgcccgaac 480
 accaagctgg tcttggggcg ctattcgcag ggcgcaaccg tgatcgatat cgtggccggg 540
 gttccgttgg gcagcatcag ctttggcagt ccgctacctg cggcatacgc agacaacgtc 600
 gcagcggtcg cggctcttcg caatccgtcc aaccgcgccg gcggatcgct gtcgagcctg 660
 agcccgtat tcggttccaa ggcgattgac ctgtgcaatc ccaccgatcc gatctgccat 720
 gtgggccccg gcaacgaatt cagcggacac atcgacggct acataccac ctacaccacc 780
 caggcgggta gtttcgtcgt gcagaggctc cgcgccgggt cggtgccaca tctgcctgga 840
 tccgtcccg agctgcccg gtctgtcctt cagatgcccg gcactgccgc accggctccc 900
 gaatcgctgc acggtcgctg acgctttgtc agtaagccca taaaatcgcg 950

<210> 56
 <211> 262
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 56
 Met Asn Asn Arg Pro Ile Arg Leu Leu Thr Ser Gly Arg Ala Gly Leu

1	5	10	15
Gly Ala Gly Ala Leu Ile Thr Ala Val Val Leu Leu Ile Ala Leu Gly	20	25	30
Ala Val Trp Thr Pro Val Ala Phe Ala Asp Gly Cys Pro Asp Ala Glu	35	40	45
Val Thr Phe Ala Arg Gly Thr Gly Glu Pro Pro Gly Ile Gly Arg Val	50	55	60
Gly Gln Ala Phe Val Asp Ser Leu Arg Gln Gln Thr Gly Met Glu Ile	65	70	75
Gly Val Tyr Pro Val Asn Tyr Ala Ala Ser Arg Leu Gln Leu His Gly	85	90	95
Gly Asp Gly Ala Asn Asp Ala Ile Ser His Ile Lys Ser Met Ala Ser	100	105	110
Ser Cys Pro Asn Thr Lys Leu Val Leu Gly Gly Tyr Ser Gln Gly Ala	115	120	125
Thr Val Ile Asp Ile Val Ala Gly Val Pro Leu Gly Ser Ile Ser Phe	130	135	140
Gly Ser Pro Leu Pro Ala Ala Tyr Ala Asp Asn Val Ala Ala Val Ala	145	150	155
Val Phe Gly Asn Pro Ser Asn Arg Ala Gly Gly Ser Leu Ser Ser Leu	165	170	175
Ser Pro Leu Phe Gly Ser Lys Ala Ile Asp Leu Cys Asn Pro Thr Asp	180	185	190
Pro Ile Cys His Val Gly Pro Gly Asn Glu Phe Ser Gly His Ile Asp	195	200	205
Gly Tyr Ile Pro Thr Tyr Thr Thr Gln Ala Ala Ser Phe Val Val Gln	210	215	220
Arg Leu Arg Ala Gly Ser Val Pro His Leu Pro Gly Ser Val Pro Gln	225	230	235
Leu Pro Gly Ser Val Leu Gln Met Pro Gly Thr Ala Ala Pro Ala Pro	245	250	255
Glu Ser Leu His Gly Arg	260		

<210> 57

<211> 1000

<212> DNA

<213> Mycobacterium tuberculosis

<400> 57

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cgaggagacc gacgatctgc tcgacgaaat cgacgacgtc ctcgaggaga acgccgagga 60
cttcgtccgc gcatacgtcc aaaagggcgg acagtgacct ggccgttgcc cgatcgccctg 120
tccattaatt cactctctgg aacaccgcgt gtagacctat cttctttcac tgacttcctg 180
cgccgccagg cgccggagtt gctgccggca agcatcagcg gcggtgcgcc actcgcaggc 240
ggcgatgcgc aactgccgca cggcaccacc attgtcgcgc tgaaataccg cggcggtgtt 300
gtcatggcgg gtgaccggcg ttcgacgcag ggcaacatga tttctgggcg tgatgtgcgc 360
aaggtgtata tcaccgatga ctacaccgct accggcatcg ctggcacggc tgcggtcgcg 420
gttgagtttg cccggctgta tgccgtggaa cttgagcact acgagaagct cgagggtgtg 480
ccgctgacgt ttgccggcaa aatcaaccgg ctggcgatta tgggtgcgtg caatctggcg 540
gccgcgatgc aggttctgct ggcgttgccg ttgctggcgg gctacgacat tcatgcgtct 600
gacccgcaga gcgcgggtcg tatcgtttcg ttcgacgccg ccggcggttg gaacatcgag 660
gaagagggct atcaggcggg gggctcgggt tcgctgttcg cgaagtcgtc gatgaagaag 720
ttgtattcgc aggttaccga cggtgattcg gggctgcggg tggcggtcga ggcgctctac 780
gacgccgccg acgacgactc cgccaccggc ggtccggacc tgggtgcgggg catctttccg 840
acggcgggtg tcatcgacgc cgacggggcg gttgacgtgc cggagagccg gattgccgaa 900
ttggcccgcg cgatcatcga aagccgttcg ggtgcggata ctttcggctc cgatggcggt 960
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<210> 58

<211> 291

<212> PRT

<213> Mycobacterium tuberculosis

<400> 58

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Met Thr Trp Pro Leu Pro Asp Arg Leu Ser Ile Asn Ser Leu Ser Gly
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Thr Pro Ala Val Asp Leu Ser Ser Phe Thr Asp Phe Leu Arg Arg Gln
      20             25             30

Ala Pro Glu Leu Leu Pro Ala Ser Ile Ser Gly Gly Ala Pro Leu Ala
      35             40             45

Gly Gly Asp Ala Gln Leu Pro His Gly Thr Thr Ile Val Ala Leu Lys
      50             55             60

Tyr Pro Gly Gly Val Val Met Ala Gly Asp Arg Arg Ser Thr Gln Gly
      65             70             75             80

Asn Met Ile Ser Gly Arg Asp Val Arg Lys Val Tyr Ile Thr Asp Asp
      85             90             95

Tyr Thr Ala Thr Gly Ile Ala Gly Thr Ala Ala Val Ala Val Glu Phe
      100            105            110

Ala Arg Leu Tyr Ala Val Glu Leu Glu His Tyr Glu Lys Leu Glu Gly
      115            120            125

Val Pro Leu Thr Phe Ala Gly Lys Ile Asn Arg Leu Ala Ile Met Val
      130            135            140

Arg Gly Asn Leu Ala Ala Ala Met Gln Gly Leu Leu Ala Leu Pro Leu
      145            150            155            160

Leu Ala Gly Tyr Asp Ile His Ala Ser Asp Pro Gln Ser Ala Gly Arg
      165            170            175

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Ile Val Ser Phe Asp Ala Ala Gly Gly Trp Asn Ile Glu Glu Glu Gly
 180 185 190
 Tyr Gln Ala Val Gly Ser Gly Ser Leu Phe Ala Lys Ser Ser Met Lys
 195 200 205
 Lys Leu Tyr Ser Gln Val Thr Asp Gly Asp Ser Gly Leu Arg Val Ala
 210 215 220
 Val Glu Ala Leu Tyr Asp Ala Ala Asp Asp Asp Ser Ala Thr Gly Gly
 225 230 235 240
 Pro Asp Leu Val Arg Gly Ile Phe Pro Thr Ala Val Ile Ile Asp Ala
 245 250 255
 Asp Gly Ala Val Asp Val Pro Glu Ser Arg Ile Ala Glu Leu Ala Arg
 260 265 270
 Ala Ile Ile Glu Ser Arg Ser Gly Ala Asp Thr Phe Gly Ser Asp Gly
 275 280 285
 Gly Glu Lys
 290

<210> 59
 <211> 900
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 59
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 ggcgcgcgtt ccggcgcac accggctccg ccctgcaagc gttgctggta gaccaggaaa 780
 gcccgcagtc tgacggcgaa tcgtcgggct gagtccgaaa gtccgacgcg tgtctgggac 840
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<210> 60
 <211> 248
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 60
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 1 5 10 15
 Ser Glu Leu Ala Arg Lys Gly Ile Ala Arg Ala Lys Ser Val Val Ala

20					25					30					
Leu	Ala	Tyr	Ala	Gly	Gly	Val	Leu	Phe	Val	Ala	Glu	Asn	Pro	Ser	Arg
	35						40					45			
Ser	Leu	Gln	Lys	Ile	Ser	Glu	Leu	Tyr	Asp	Arg	Val	Gly	Phe	Ala	Ala
	50					55					60				
Ala	Gly	Lys	Phe	Asn	Glu	Phe	Asp	Asn	Leu	Arg	Arg	Gly	Gly	Ile	Gln
	65					70					75				80
Phe	Ala	Asp	Thr	Arg	Gly	Tyr	Ala	Tyr	Asp	Arg	Arg	Asp	Val	Thr	Gly
			85						90					95	
Arg	Gln	Leu	Ala	Asn	Val	Tyr	Ala	Gln	Thr	Leu	Gly	Thr	Ile	Phe	Thr
		100						105					110		
Glu	Gln	Ala	Lys	Pro	Tyr	Glu	Val	Glu	Leu	Cys	Val	Ala	Glu	Val	Ala
		115					120					125			
His	Tyr	Gly	Glu	Thr	Lys	Arg	Pro	Glu	Leu	Tyr	Arg	Ile	Thr	Tyr	Asp
	130					135					140				
Gly	Ser	Ile	Ala	Asp	Glu	Pro	His	Phe	Val	Val	Met	Gly	Gly	Thr	Thr
	145					150					155				160
Glu	Pro	Ile	Ala	Asn	Ala	Leu	Lys	Glu	Ser	Tyr	Ala	Glu	Asn	Ala	Ser
			165						170					175	
Leu	Thr	Asp	Ala	Leu	Arg	Ile	Ala	Val	Ala	Ala	Leu	Arg	Ala	Gly	Ser
		180						185						190	
Ala	Asp	Thr	Ser	Gly	Gly	Asp	Gln	Pro	Thr	Leu	Gly	Val	Ala	Ser	Leu
		195					200					205			
Glu	Val	Ala	Val	Leu	Asp	Ala	Asn	Arg	Pro	Arg	Arg	Ala	Phe	Arg	Arg
	210					215					220				
Ile	Thr	Gly	Ser	Ala	Leu	Gln	Ala	Leu	Leu	Val	Asp	Gln	Glu	Ser	Pro
	225					230					235				240
Gln	Ser	Asp	Gly	Glu	Ser	Ser	Gly								
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<210> 61

<211> 1560

<212> DNA

<213> Mycobacterium tuberculosis

<400> 61

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gagtcattgc ctggctcggcg tcattccgta ctagtcggtt gtcggacttg acctactggg 60
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tctcggagcc ggtcccggcg ggtatgtcgc ggcgattcgc gccgcacagc tcggcctgag 180
cactgcaatc gtcgaaccca agtactgggg cggagtatgc ctcaatgtcg gctgtatccc 240
atccaaggcg ctggtgcgca acgccgaact ggtccacatc ttcaccaagg acgccaagc 300
atttggcatc agcggcgagg tgaccttcca ctacggcatc gcctatgacc gcagccgaaa 360

```

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ggtagccgag ggcaggggtgg ccggtgtgca cttcctgatg aagaagaaca agatcaccga 420
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cggtagacaa tcggtcacgt tcgacaacgc catcatcgcg accggcagta gcacccggct 540
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cgtgctgaag aactacggcg ttgacgtgac catcgtggaa ttccctccgc gggcgctgcc 720
caacgaggac gccgatgtgt ccaaggagat cgagaagcag ttcaaaaagc tgggtgtcac 780
gatcctgacc gccacgaagg tcgagtccat cgccgatggc gggtcgcagg tcaccgtgac 840
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tgacgaggcg cgcgagcact gacaccccc agatcatcat gggtgccatc ggtggtgtgg 1560

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<210> 62

<211> 464

<212> PRT

<213> Mycobacterium tuberculosis

<400> 62

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Met Thr His Tyr Asp Val Val Val Leu Gly Ala Gly Pro Gly Gly Tyr
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Val Ala Ala Ile Arg Ala Ala Gln Leu Gly Leu Ser Thr Ala Ile Val
      20              25              30

Glu Pro Lys Tyr Trp Gly Gly Val Cys Leu Asn Val Gly Cys Ile Pro
      35              40              45

Ser Lys Ala Leu Leu Arg Asn Ala Glu Leu Val His Ile Phe Thr Lys
      50              55              60

Asp Ala Lys Ala Phe Gly Ile Ser Gly Glu Val Thr Phe Asp Tyr Gly
      65              70              75              80

Ile Ala Tyr Asp Arg Ser Arg Lys Val Ala Glu Gly Arg Val Ala Gly
      85              90              95

Val His Phe Leu Met Lys Lys Asn Lys Ile Thr Glu Ile His Gly Tyr
      100             105             110

Gly Thr Phe Ala Asp Ala Asn Thr Leu Leu Val Asp Leu Asn Asp Gly
      115             120             125

Gly Thr Glu Ser Val Thr Phe Asp Asn Ala Ile Ile Ala Thr Gly Ser
      130             135             140

Ser Thr Arg Leu Val Pro Gly Thr Ser Leu Ser Ala Asn Val Val Thr
      145             150             155             160

```

Tyr	Glu	Glu	Gln	Ile	Leu	Ser	Arg	Glu	Leu	Pro	Lys	Ser	Ile	Ile	Ile	165	170	175
Ala	Gly	Ala	Gly	Ala	Ile	Gly	Met	Glu	Phe	Gly	Tyr	Val	Leu	Lys	Asn	180	185	190
Tyr	Gly	Val	Asp	Val	Thr	Ile	Val	Glu	Phe	Leu	Pro	Arg	Ala	Leu	Pro	195	200	205
Asn	Glu	Asp	Ala	Asp	Val	Ser	Lys	Glu	Ile	Glu	Lys	Gln	Phe	Lys	Lys	210	215	220
Leu	Gly	Val	Thr	Ile	Leu	Thr	Ala	Thr	Lys	Val	Glu	Ser	Ile	Ala	Asp	225	230	235
Gly	Gly	Ser	Gln	Val	Thr	Val	Thr	Val	Thr	Lys	Asp	Gly	Val	Ala	Gln	245	250	255
Glu	Leu	Lys	Ala	Glu	Lys	Val	Leu	Gln	Ala	Ile	Gly	Phe	Ala	Pro	Asn	260	265	270
Val	Glu	Gly	Tyr	Gly	Leu	Asp	Lys	Ala	Gly	Val	Ala	Leu	Thr	Asp	Arg	275	280	285
Lys	Ala	Ile	Gly	Val	Asp	Asp	Tyr	Met	Arg	Thr	Asn	Val	Gly	His	Ile	290	295	300
Tyr	Ala	Ile	Gly	Asp	Val	Asn	Gly	Leu	Leu	Gln	Leu	Ala	His	Val	Ala	305	310	315
Glu	Ala	Gln	Gly	Val	Val	Ala	Ala	Glu	Thr	Ile	Ala	Gly	Ala	Glu	Thr	325	330	335
Leu	Thr	Leu	Gly	Asp	His	Arg	Met	Leu	Pro	Arg	Ala	Thr	Phe	Cys	Gln	340	345	350
Pro	Asn	Val	Ala	Ser	Phe	Gly	Leu	Thr	Glu	Gln	Gln	Ala	Arg	Asn	Glu	355	360	365
Gly	Tyr	Asp	Val	Val	Val	Ala	Lys	Phe	Pro	Phe	Thr	Ala	Asn	Ala	Lys	370	375	380
Ala	His	Gly	Val	Gly	Asp	Pro	Ser	Gly	Phe	Val	Lys	Leu	Val	Ala	Asp	385	390	395
Ala	Lys	His	Gly	Glu	Leu	Leu	Gly	Gly	His	Leu	Val	Gly	His	Asp	Val	405	410	415
Ala	Glu	Leu	Leu	Pro	Glu	Leu	Thr	Leu	Ala	Gln	Arg	Trp	Asp	Leu	Thr	420	425	430
Ala	Ser	Glu	Leu	Ala	Arg	Asn	Val	His	Thr	His	Pro	Thr	Met	Ser	Glu	435	440	445
Ala	Leu	Gln	Glu	Cys	Phe	His	Gly	Leu	Val	Gly	His	Met	Ile	Asn	Phe	450	455	460

<210> 63
 <211> 550
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 63
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 cgaactgctg gacgcgttca aggaaatgac cctgttggag ctctccgact tcgtcaagaa 180
 gttcgaggag accttcgagg tcaccgccgc cgctccagtc gccgtcgccg ccgcccgtgc 240
 cgccccggcc ggtgccgccc tcgaggctgc cgaggagcag tccgagttcg acgtgatcct 300
 tgaggccgcc ggcgacaaga agatcggcgt catcaaggtg gtccgggaga tcgtttccgg 360
 cctgggcctc aaggaggcca aggacctggt cgacggcgcg cccaagccgc tgctggagaa 420
 ggtcgccaag gaggccgccc acgaggccaa ggccaagctg gaggccgccc gcgccaccgt 480
 caccgtcaag tagctctgcc cagcgtgttc ttttgcgtct gtcggtccc tagcgaacac 540
 tcgccccgct 550

<210> 64
 <211> 130
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 64
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 Thr Leu Leu Glu Leu Ser Asp Phe Val Lys Lys Phe Glu Glu Thr Phe
 20 25 30
 Glu Val Thr Ala Ala Ala Pro Val Ala Val Ala Ala Ala Gly Ala Ala
 35 40 45
 Pro Ala Gly Ala Ala Val Glu Ala Ala Glu Glu Gln Ser Glu Phe Asp
 50 55 60
 Val Ile Leu Glu Ala Ala Gly Asp Lys Lys Ile Gly Val Ile Lys Val
 65 70 75 80
 Val Arg Glu Ile Val Ser Gly Leu Gly Leu Lys Glu Ala Lys Asp Leu
 85 90 95
 Val Asp Gly Ala Pro Lys Pro Leu Leu Glu Lys Val Ala Lys Glu Ala
 100 105 110
 Ala Asp Glu Ala Lys Ala Lys Leu Glu Ala Ala Gly Ala Thr Val Thr
 115 120 125
 Val Lys
 130

<210> 65
 <211> 900

<212> DNA

<213> Mycobacterium tuberculosis

<400> 65

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ccgattcaga cgggaatttc ggtaatccgc tgggggtgat caacgccagc aaggtcgaac 180
accgcgacag gcagcagctg gcagcccaat cgggctacag cgaaaccata ttcgtcgatc 240
ttcccagccc cggctcaacc accgcacacg ccaccatcca tactccccgc accgaaattc 300
cgttcgccgg acacccgacc gtgggagcgt cctggtggct gcgcgagagg gggacgcaa 360
ttaacacgct gcaggtgccg gccggcatcg tccaggtgag ctaccacggt gatctcaccg 420
ccatcagcgc ccgctcgga tgggcacccg agttcgccat ccacgacctg gattcacttg 480
atgcgcttgc cgccgccgac cccgccgact ttccggacga catcgcgcac tacctctgga 540
cctggaccga ccgctccgct ggctcgctgc gcgcccgcat gtttgccgcc aacttggggc 600
tcaccgaaga cgaagcgacc ggtgccgagg ccattccgat taccgattac ctccagccgtg 660
acctcaccat caccaggggc aaaggatcgt tgatccacac cacctggagt cccgagggct 720
gggttcgggt agccggccga gttgtcagcg acggtgtggc acaactcgac tgacgtagag 780
ctcagcgctg ccgatgcaac acggcggcaa ggtgatcctg caggggttgc ccgaccgcgc 840
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<210> 66

<211> 228

<212> PRT

<213> Mycobacterium tuberculosis

<400> 66

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Met Ala Ile Glu Val Ser Val Leu Arg Val Phe Thr Asp Ser Asp Gly
 1             5             10            15

Asn Phe Gly Asn Pro Leu Gly Val Ile Asn Ala Ser Lys Val Glu His
 20            25            30

Arg Asp Arg Gln Gln Leu Ala Ala Gln Ser Gly Tyr Ser Glu Thr Ile
 35            40            45

Phe Val Asp Leu Pro Ser Pro Gly Ser Thr Thr Ala His Ala Thr Ile
 50            55            60

His Thr Pro Arg Thr Glu Ile Pro Phe Ala Gly His Pro Thr Val Gly
 65            70            75            80

Ala Ser Trp Trp Leu Arg Glu Arg Gly Thr Pro Ile Asn Thr Leu Gln
 85            90            95

Val Pro Ala Gly Ile Val Gln Val Ser Tyr His Gly Asp Leu Thr Ala
100           105           110

Ile Ser Ala Arg Ser Glu Trp Ala Pro Glu Phe Ala Ile His Asp Leu
115           120           125

Asp Ser Leu Asp Ala Leu Ala Ala Ala Asp Pro Ala Asp Phe Pro Asp
130           135           140

Asp Ile Ala His Tyr Leu Trp Thr Trp Thr Asp Arg Ser Ala Gly Ser
145           150           155           160

Leu Arg Ala Arg Met Phe Ala Ala Asn Leu Gly Val Thr Glu Asp Glu
```

165 170 175

Ala Thr Gly Ala Ala Ala Ile Arg Ile Thr Asp Tyr Leu Ser Arg Asp
180 185 190

Leu Thr Ile Thr Gln Gly Lys Gly Ser Leu Ile His Thr Thr Trp Ser
195 200 205

Pro Glu Gly Trp Val Arg Val Ala Gly Arg Val Val Ser Asp Gly Val
210 215 220

Ala Gln Leu Asp
225

<210> 67
<211> 500
<212> DNA
<213> Mycobacterium tuberculosis

<400> 67

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ggcatggggg gtgtgggtgg tttgggtggg gccggttcgg gtccggcgat gggcatgggg 180
ggtgtgggtg gttagatgc ggccggttcc ggcgagggcg gctctcctgc ggcgatcggc 240
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cgctccgaca ggtcgtcggg cgtcgggggc ggagtctggc cgttgggctt cggtaggttt 360
gccgatgcgg gcgcggcgcg aaacgaagca ctggggtcga agaacggctg cgctgccata 420
tcgtccggag cttccatacc ttcgtgcggc cggaagagct tgtcgtagtc ggccgccatg 480
acaacctctc agagtgcgct 500

<210> 68
<211> 139
<212> PRT
<213> Mycobacterium tuberculosis

<400> 68

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Gly Ala Gly Ser Gly Pro Ala Met Gly Met Gly Gly Val Gly Gly Leu
20 25 30

Gly Gly Ala Gly Ser Gly Pro Ala Met Gly Met Gly Gly Val Gly Gly
35 40 45

Leu Asp Ala Ala Gly Ser Gly Glu Gly Gly Ser Pro Ala Ala Ile Gly
50 55 60

Ile Gly Val Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly
65 70 75 80

Ala Asp Thr Asn Arg Ser Asp Arg Ser Ser Asp Val Gly Gly Gly Val
85 90 95

Trp Pro Leu Gly Phe Gly Arg Phe Ala Asp Ala Gly Ala Gly Gly Asn
100 105 110

Glu Ala Leu Gly Ser Lys Asn Gly Cys Ala Ala Ile Ser Ser Gly Ala
 115 120 125

Ser Ile Pro Ser Cys Gly Arg Lys Ser Leu Ser
 130 135

<210> 69

<211> 2050

<212> DNA

<213> Mycobacterium tuberculosis

<400> 69

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cctccgatgc ccatcgccgg acctgcaccc accccaaccg aatcccagtt ggcgcccccc 480
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cacgtaccct cgcacgggcc acatcaaccc cggcgacccg caccagcacc gccctgggca 600
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ctggtcctac 2050

```

<210> 70

<211> 666

<212> PRT

<213> Mycobacterium tuberculosis

<400> 70

Met Ala Ala Asp Tyr Asp Lys Leu Phe Arg Pro His Glu Gly Met Glu

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Ala Pro Asp Asp Met Ala Ala Gln Pro Phe Phe Asp Pro Ser Ala Ser	20	25	30
Phe Pro Pro Ala Pro Ala Ser Ala Asn Leu Pro Lys Pro Asn Gly Gln	35	40	45
Thr Pro Pro Pro Thr Ser Asp Asp Leu Ser Glu Arg Phe Val Ser Ala	50	55	60
Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Thr Pro Met	65	70	75
Pro Ile Ala Ala Gly Glu Pro Pro Ser Pro Glu Pro Ala Ala Ser Lys	85	90	95
Pro Pro Thr Pro Pro Met Pro Ile Ala Gly Pro Glu Pro Ala Pro Pro	100	105	110
Lys Pro Pro Thr Pro Pro Met Pro Ile Ala Gly Pro Glu Pro Ala Pro	115	120	125
Pro Lys Pro Pro Thr Pro Pro Met Pro Ile Ala Gly Pro Ala Pro Thr	130	135	140
Pro Thr Glu Ser Gln Leu Ala Pro Pro Arg Pro Pro Thr Pro Gln Thr	145	150	155
Pro Thr Gly Ala Pro Gln Gln Pro Glu Ser Pro Ala Pro His Val Pro	165	170	175
Ser His Gly Pro His Gln Pro Arg Arg Thr Ala Pro Ala Pro Pro Trp	180	185	190
Ala Lys Met Pro Ile Gly Glu Pro Pro Pro Ala Pro Ser Arg Pro Ser	195	200	205
Ala Ser Pro Ala Glu Pro Pro Thr Arg Pro Ala Pro Gln His Ser Arg	210	215	220
Arg Ala Arg Arg Gly His Arg Tyr Arg Thr Asp Thr Glu Arg Asn Val	225	230	235
Gly Lys Val Ala Thr Gly Pro Ser Ile Gln Ala Arg Leu Arg Ala Glu	245	250	255
Glu Ala Ser Gly Ala Gln Leu Ala Pro Gly Thr Glu Pro Ser Pro Ala	260	265	270
Pro Leu Gly Gln Pro Arg Ser Tyr Leu Ala Pro Pro Thr Arg Pro Ala	275	280	285
Pro Thr Glu Pro Pro Pro Ser Pro Ser Pro Gln Arg Asn Ser Gly Arg	290	295	300
Arg Ala Glu Arg Arg Val His Pro Asp Leu Ala Ala Gln His Ala Ala			

305		310		315		320
Ala Gln Pro Asp Ser Ile Thr Ala Ala Thr Thr Gly Gly Arg Arg Arg	325		330		335	
Lys Arg Ala Ala Pro Asp Leu Asp Ala Thr Gln Lys Ser Leu Arg Pro	340		345		350	
Ala Ala Lys Gly Pro Lys Val Lys Lys Val Lys Pro Gln Lys Pro Lys	355		360		365	
Ala Thr Lys Pro Pro Lys Val Val Ser Gln Arg Gly Trp Arg His Trp	370		375		380	
Val His Ala Leu Thr Arg Ile Asn Leu Gly Leu Ser Pro Asp Glu Lys	385		390		395	400
Tyr Glu Leu Asp Leu His Ala Arg Val Arg Arg Asn Pro Arg Gly Ser	405		410		415	
Tyr Gln Ile Ala Val Val Gly Leu Lys Gly Gly Ala Gly Lys Thr Thr	420		425		430	
Leu Thr Ala Ala Leu Gly Ser Thr Leu Ala Gln Val Arg Ala Asp Arg	435		440		445	
Ile Leu Ala Leu Asp Ala Asp Pro Gly Ala Gly Asn Leu Ala Asp Arg	450		455		460	
Val Gly Arg Gln Ser Gly Ala Thr Ile Ala Asp Val Leu Ala Glu Lys	465		470		475	480
Glu Leu Ser His Tyr Asn Asp Ile Arg Ala His Thr Ser Val Asn Ala	485		490		495	
Val Asn Leu Glu Val Leu Pro Ala Pro Glu Tyr Ser Ser Ala Gln Arg	500		505		510	
Ala Leu Ser Asp Ala Asp Trp His Phe Ile Ala Asp Pro Ala Ser Arg	515		520		525	
Phe Tyr Asn Leu Val Leu Ala Asp Cys Gly Ala Gly Phe Phe Asp Pro	530		535		540	
Leu Thr Arg Gly Val Leu Ser Thr Val Ser Gly Val Val Val Val Ala	545		550		555	560
Ser Val Ser Ile Asp Gly Ala Gln Gln Ala Ser Val Ala Leu Asp Trp	565		570		575	
Leu Arg Asn Asn Gly Tyr Gln Asp Leu Ala Ser Arg Ala Cys Val Val	580		585		590	
Ile Asn His Ile Met Pro Gly Glu Pro Asn Val Ala Val Lys Asp Leu	595		600		605	
Val Arg His Phe Glu Gln Gln Val Gln Pro Gly Arg Val Val Val Met						

610	615	620
Pro Trp Asp Arg His Ile Ala Ala Gly Thr Glu Ile Ser Leu Asp Leu		
625	630	635 640
Leu Asp Pro Ile Tyr Lys Arg Lys Val Leu Glu Leu Ala Ala Ala Leu		
	645	650 655
Ser Asp Asp Phe Glu Arg Ala Gly Arg Arg		
660	665	

<210> 71
 <211> 1890
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 71

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ggggccggcg	gcaacatcgg	tattgggggc	gcacctcaaa	ccgggaagtc	gacgctactg	360
cagacgatgg	tgatgtcggc	cgccgccaca	cactcaccgc	gcaacgttca	gttctattgc	420
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gccaatcgg	ccgagcccga	caaggtcaac	cgggtgggtcg	cagagatgca	agccgtcatg	540
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cggcgccccc	ctggccaggc	atttctcgtc	tcgccagacg	gcaaagaggt	catccaggcc	1800
ccctacatcg	agcctccaga	agaagtgttc	gcagcaccgc	caagcgccgg	ttaagattat	1860
ttcattgccg	gtgtagcagg	acccgagctc				1890

<210> 72
 <211> 591
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 72

Met	Thr	Ala	Glu	Pro	Glu	Val	Arg	Thr	Leu	Arg	Glu	Val	Val	Leu	Asp	
1				5					10					15		
Gln	Leu	Gly	Thr	Ala	Glu	Ser	Arg	Ala	Tyr	Lys	Met	Trp	Leu	Pro	Pro	
			20					25					30			
Leu	Thr	Asn	Pro	Val	Pro	Leu	Asn	Glu	Leu	Ile	Ala	Arg	Asp	Arg	Arg	
		35					40					45				
Gln	Pro	Leu	Arg	Phe	Ala	Leu	Gly	Ile	Met	Asp	Glu	Pro	Arg	Arg	His	
	50					55					60					
Leu	Gln	Asp	Val	Trp	Gly	Val	Asp	Val	Ser	Gly	Ala	Gly	Gly	Asn	Ile	
65					70					75					80	
Gly	Ile	Gly	Gly	Ala	Pro	Gln	Thr	Gly	Lys	Ser	Thr	Leu	Leu	Gln	Thr	
				85					90					95		
Met	Val	Met	Ser	Ala	Ala	Ala	Thr	His	Ser	Pro	Arg	Asn	Val	Gln	Phe	
			100					105					110			
Tyr	Cys	Ile	Asp	Leu	Gly	Gly	Gly	Gly	Leu	Ile	Tyr	Leu	Glu	Asn	Leu	
	115						120					125				
Pro	His	Val	Gly	Gly	Val	Ala	Asn	Arg	Ser	Glu	Pro	Asp	Lys	Val	Asn	
	130					135					140					
Arg	Val	Val	Ala	Glu	Met	Gln	Ala	Val	Met	Arg	Gln	Arg	Glu	Thr	Thr	
145					150					155					160	
Phe	Lys	Glu	His	Arg	Val	Gly	Ser	Ile	Gly	Met	Tyr	Arg	Gln	Leu	Arg	
			165					170						175		
Asp	Asp	Pro	Ser	Gln	Pro	Val	Ala	Ser	Asp	Pro	Tyr	Gly	Asp	Val	Phe	
		180						185					190			
Leu	Ile	Ile	Asp	Gly	Trp	Pro	Gly	Phe	Val	Gly	Glu	Phe	Pro	Asp	Leu	
	195						200					205				
Glu	Gly	Gln	Val	Gln	Asp	Leu	Ala	Ala	Gln	Gly	Leu	Gly	Phe	Gly	Val	
	210					215					220					
His	Val	Ile	Ile	Ser	Thr	Pro	Arg	Trp	Thr	Glu	Leu	Lys	Ser	Arg	Val	
225					230					235					240	
Arg	Asp	Tyr	Leu	Gly	Thr	Lys	Ile	Glu	Phe	Arg	Leu	Gly	Asp	Val	Asn	
			245					250						255		
Glu	Thr	Gln	Ile	Asp	Arg	Ile	Thr	Arg	Glu	Ile	Pro	Ala	Asn	Arg	Pro	
		260						265					270			
Gly	Arg	Ala	Val	Ser	Met	Glu	Lys	His	His	Leu	Met	Ile	Gly	Val	Pro	
	275						280					285				
Arg	Phe	Asp	Gly	Val	His	Ser	Ala	Asp	Asn	Leu	Val	Glu	Ala	Ile	Thr	
	290					295					300					

Ala	Gly	Val	Thr	Gln	Ile	Ala	Ser	Gln	His	Thr	Glu	Gln	Ala	Pro	Pro	305	310	315	320
Val	Arg	Val	Leu	Pro	Glu	Arg	Ile	His	Leu	His	Glu	Leu	Asp	Pro	Asn	325	330	335	
Pro	Pro	Gly	Pro	Glu	Ser	Asp	Tyr	Arg	Thr	Arg	Trp	Glu	Ile	Pro	Ile	340	345	350	
Gly	Leu	Arg	Glu	Thr	Asp	Leu	Thr	Pro	Ala	His	Cys	His	Met	His	Thr	355	360	365	
Asn	Pro	His	Leu	Leu	Ile	Phe	Gly	Ala	Ala	Lys	Ser	Gly	Lys	Thr	Thr	370	375	380	
Ile	Ala	His	Ala	Ile	Ala	Arg	Ala	Ile	Cys	Ala	Arg	Asn	Ser	Pro	Gln	385	390	395	400
Gln	Val	Arg	Phe	Met	Leu	Ala	Asp	Tyr	Arg	Ser	Gly	Leu	Leu	Asp	Ala	405	410	415	
Val	Pro	Asp	Thr	His	Leu	Leu	Gly	Ala	Gly	Ala	Ile	Asn	Arg	Asn	Ser	420	425	430	
Ala	Ser	Leu	Asp	Glu	Ala	Ala	Gln	Ala	Leu	Ala	Val	Asn	Leu	Lys	Lys	435	440	445	
Arg	Leu	Pro	Pro	Thr	Asp	Leu	Thr	Thr	Ala	Gln	Leu	Arg	Ser	Arg	Ser	450	455	460	
Trp	Trp	Ser	Gly	Phe	Asp	Val	Val	Leu	Leu	Val	Asp	Asp	Trp	His	Met	465	470	475	480
Ile	Val	Gly	Ala	Ala	Gly	Gly	Met	Pro	Pro	Met	Ala	Pro	Leu	Ala	Pro	485	490	495	
Leu	Leu	Pro	Ala	Ala	Ala	Asp	Ile	Gly	Leu	His	Ile	Ile	Val	Thr	Cys	500	505	510	
Gln	Met	Ser	Gln	Ala	Tyr	Lys	Ala	Thr	Met	Asp	Lys	Phe	Val	Gly	Ala	515	520	525	
Ala	Phe	Gly	Ser	Gly	Ala	Pro	Thr	Met	Phe	Leu	Ser	Gly	Glu	Lys	Gln	530	535	540	
Glu	Phe	Pro	Ser	Ser	Glu	Phe	Lys	Val	Lys	Arg	Arg	Pro	Pro	Gly	Gln	545	550	555	560
Ala	Phe	Leu	Val	Ser	Pro	Asp	Gly	Lys	Glu	Val	Ile	Gln	Ala	Pro	Tyr	565	570	575	
Ile	Glu	Pro	Pro	Glu	Glu	Val	Phe	Ala	Ala	Pro	Pro	Ser	Ala	Gly		580	585	590	

<210> 73

<211> 15

<212> PRT
<213> Mycobacterium tuberculosis

<400> 73
Asp Pro Val Asp Asp Ala Phe Ile Ala Lys Leu Asn Thr Ala Gly
1 5 10 15

<210> 74
<211> 14
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> UNSURE
<222> (14)
<223> Xaa is unknown

<400> 74
Asp Pro Val Asp Ala Ile Ile Asn Leu Asp Asn Tyr Gly Xaa
1 5 10

<210> 75
<211> 15
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> UNSURE
<222> (5)
<223> Xaa is unknown

<400> 75
Ala Glu Met Lys Xaa Phe Lys Asn Ala Ile Val Gln Glu Ile Asp
1 5 10 15

<210> 76
<211> 14
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> VARIANT
<222> (3)
<223> Ala is Ala or Gln

<220>
<221> VARIANT
<222> (7)
<223> Thr is Gly or Thr

<220>
<221> UNSURE
<222> (11)
<223> Xaa is unknown

<400> 76

Val Ile Ala Gly Met Val Thr His Ile His Xaa Val Ala Gly
1 5 10

<210> 77

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 77

Thr Asn Ile Val Val Leu Ile Lys Gln Val Pro Asp Thr Trp Ser
1 5 10 15

<210> 78

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 78

Ala Ile Glu Val Ser Val Leu Arg Val Phe Thr Asp Ser Asp Gly
1 5 10 15

<210> 79

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 79

Ala Lys Leu Ser Thr Asp Glu Leu Leu Asp Ala Phe Lys Glu Met
1 5 10 15

<210> 80

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<220>

<221> VARIANT

<222> (4)

<223> Asp is Asp or Glu

<400> 80

Asp Pro Ala Asp Ala Pro Asp Val Pro Thr Ala Ala Gln Leu Thr
1 5 10 15

<210> 81

<211> 50

<212> PRT

<213> Mycobacterium tuberculosis

<400> 81

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val
 1 5 10 15
 Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu
 20 25 30
 Glu Ser Met Tyr Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr
 35 40 45
 Val Ser
 50

<210> 82
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 82
 Thr Thr Ser Pro Asp Pro Tyr Ala Ala Leu Pro Lys Leu Pro Ser
 1 5 10 15

<210> 83
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 83
 Thr Glu Tyr Glu Gly Pro Lys Thr Lys Phe His Ala Leu Met Gln
 1 5 10 15

<210> 84
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 84
 Thr Thr Ile Val Ala Leu Lys Tyr Pro Gly Gly Val Val Met Ala
 1 5 10 15

<210> 85
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> UNSURE
 <222> (10)
 <223> Xaa is unknown

<220>
 <221> UNSURE
 <222> (15)
 <223> Xaa is unknown

<400> 85

Ser Phe Pro Tyr Phe Ile Ser Pro Glu Xaa Ala Met Arg Glu Xaa
1 5 10 15

<210> 86

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 86

Thr His Tyr Asp Val Val Val Leu Gly Ala Gly Pro Gly Gly Tyr
1 5 10 15

<210> 87

<211> 450

<212> DNA

<213> Mycobacterium tuberculosis

<400> 87

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acatgatccg atcgctgccg acattggcac gcaagtgagc gacaacgctc tgcacggcgt 180
gacggccggc tcgacggcgc tgacgtcggg gaccgggctg gttcccgcgg gggccgatga 240
ggtctccgcc caagcggcga cggcgttcac atcggagggc atccaattgc tggcttccaa 300
tgcacgggcc caagaccagc tccaccgtgc gggcgaagcg gtccaggacg tcgcccgcac 360
ctattcgcaa atcgacgacg gcgccgccgg cgtcttcgcc taataggccc ccaacacatc 420
ggagggagtg atcaccatgc tgtggcacgc 450

<210> 88

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 88

Met Glu Lys Met Ser His Asp Pro Ile Ala Ala Asp Ile Gly Thr Gln
1 5 10 15

Val Ser Asp Asn Ala Leu His Gly Val Thr Ala Gly Ser Thr Ala Leu
20 25 30

Thr Ser Val Thr Gly Leu Val Pro Ala Gly Ala Asp Glu Val Ser Ala
35 40 45

Gln Ala Ala Thr Ala Phe Thr Ser Glu Gly Ile Gln Leu Leu Ala Ser
50 55 60

Asn Ala Ser Ala Gln Asp Gln Leu His Arg Ala Gly Glu Ala Val Gln
65 70 75 80

Asp Val Ala Arg Thr Tyr Ser Gln Ile Asp Asp Gly Ala Ala Gly Val
85 90 95

Phe Ala

<210> 89
 <211> 460
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 89
 gcaaccggct tttcgatcag ctgagacatc agcggcgtgc ggggtcaacga cccacctgcg 60
 ccaggtagcg actccgcgcg cagcaggccc gcgcccgcgc tggggcctga tccaccagcc 120
 agcggatggt tcgacagcgg actggtgccg agcaggccca tctgcgcggc ttcctcgtcg 180
 gctgggttgc cgccgccggt gccgccacc tggtgaaca acgacgtcac ctgctgcagc 240
 ggctgggtca gctgctgcat cgggccgctc atctcaccca gttggccgag ggtctgggta 300
 gccgccggcg gcaactggcc aaccggtgtt gagctgccag gggagggcat tccgaagatc 360
 gggttcgtcg tgctctggct cgcgccggga tcaaggatcg acgccatcgg ctcgagcttc 420
 tcgaaaagcg tgtaaccgc ggtctcggcc tggtagacct 460

<210> 90
 <211> 139
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 90
 Met Arg Val Asn Asp Pro Pro Ala Pro Gly Ser Asp Ser Ala Arg Ser
 1 5 10 15
 Arg Pro Ala Pro Ala Leu Gly Pro Asp Pro Pro Ala Ser Gly Trp Phe
 20 25 30
 Asp Ser Gly Leu Val Pro Ser Arg Pro Ile Cys Ala Ala Ser Ser Ser
 35 40 45
 Ala Gly Leu Pro Pro Pro Val Pro Pro Thr Trp Leu Asn Asn Asp Val
 50 55 60
 Thr Cys Cys Ser Gly Trp Val Ser Cys Cys Ile Gly Pro Leu Ile Ser
 65 70 75 80
 Pro Ser Trp Pro Arg Val Trp Val Ala Ala Gly Gly Asn Trp Pro Thr
 85 90 95
 Gly Val Glu Leu Pro Gly Glu Gly Ile Pro Lys Ile Gly Phe Val Val
 100 105 110
 Leu Trp Leu Ala Pro Gly Ser Arg Ile Asp Ala Ile Gly Ser Ser Phe
 115 120 125
 Ser Lys Ser Val Leu Thr Ala Val Ser Ala Trp
 130 135

<210> 91
 <211> 1200
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 91

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gagctaaata ccgcacggct gatggcggc gcgggtccgg ctccaatgct tgcggcggcc 120
gcgggatggc agacgctttc ggcggtctctg gacgctcagg ccgtcgagtt gaccgcgcgc 180
ctgaactctc tgggagaagc ctggactgga ggtggcagcg acaaggcgct tgcggctgca 240
acgccgatgg tggcttggct acaaaccgcg tcaacacagg ccaagaccg tgcgatgcag 300
gcgacggcgc aagccgcggc atacaccag gccatggcca cgacgccgtc gctgccggag 360
atcgccgcca accacatcac ccaggccgtc cttacggcca ccaacttctt cggtatcaac 420
acgatcccga tcgcgttgac cgagatggat tatttcatcc gtatgtggaa ccaggcagcc 480
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ccgatggcgt cgatccttga tcccggcgcg agccagagca cgacgaacc gatcttcgga 600
atgccctccc ctggcagctc aacaccggtt ggccagtgc cgccggcggc taccagacc 660
ctcgcccaac tgggtgagat gagcggcccg atgcagcagc tgaccagcc gctgcagcag 720
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```

<210> 92

<211> 371

<212> PRT

<213> Mycobacterium tuberculosis

<400> 92

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Met Ile Thr Met Leu Trp His Ala Met Pro Pro Glu Leu Asn Thr Ala
 1               5               10               15

Arg Leu Met Ala Gly Ala Gly Pro Ala Pro Met Leu Ala Ala Ala Ala
      20               25               30

Gly Trp Gln Thr Leu Ser Ala Ala Leu Asp Ala Gln Ala Val Glu Leu
      35               40               45

Thr Ala Arg Leu Asn Ser Leu Gly Glu Ala Trp Thr Gly Gly Gly Ser
      50               55               60

Asp Lys Ala Leu Ala Ala Ala Thr Pro Met Val Val Trp Leu Gln Thr
      65               70               75               80

Ala Ser Thr Gln Ala Lys Thr Arg Ala Met Gln Ala Thr Ala Gln Ala
      85               90               95

Ala Ala Tyr Thr Gln Ala Met Ala Thr Thr Pro Ser Leu Pro Glu Ile
      100              105              110

Ala Ala Asn His Ile Thr Gln Ala Val Leu Thr Ala Thr Asn Phe Phe
      115              120              125

Gly Ile Asn Thr Ile Pro Ile Ala Leu Thr Glu Met Asp Tyr Phe Ile
      130              135              140

Arg Met Trp Asn Gln Ala Ala Leu Ala Met Glu Val Tyr Gln Ala Glu
      145              150              155              160

```

Thr Ala Val Asn Thr Leu Phe Glu Lys Leu Glu Pro Met Ala Ser Ile
 165 170 175
 Leu Asp Pro Gly Ala Ser Gln Ser Thr Thr Asn Pro Ile Phe Gly Met
 180 185 190
 Pro Ser Pro Gly Ser Ser Thr Pro Val Gly Gln Leu Pro Pro Ala Ala
 195 200 205
 Thr Gln Thr Leu Gly Gln Leu Gly Glu Met Ser Gly Pro Met Gln Gln
 210 215 220
 Leu Thr Gln Pro Leu Gln Gln Val Thr Ser Leu Phe Ser Gln Val Gly
 225 230 235 240
 Gly Thr Gly Gly Gly Asn Pro Ala Asp Glu Glu Ala Ala Gln Met Gly
 245 250 255
 Leu Leu Gly Thr Ser Pro Leu Ser Asn His Pro Leu Ala Gly Gly Ser
 260 265 270
 Gly Pro Ser Ala Gly Ala Gly Leu Leu Arg Ala Glu Ser Leu Pro Gly
 275 280 285
 Ala Gly Gly Ser Leu Thr Arg Thr Pro Leu Met Ser Gln Leu Ile Glu
 290 295 300
 Lys Pro Val Ala Pro Ser Val Met Pro Ala Ala Ala Ala Gly Ser Ser
 305 310 315 320
 Ala Thr Gly Gly Ala Ala Pro Val Gly Ala Gly Ala Met Gly Gln Gly
 325 330 335
 Ala Gln Ser Gly Gly Ser Thr Arg Pro Gly Leu Val Ala Pro Ala Pro
 340 345 350
 Leu Ala Gln Glu Arg Glu Glu Asp Asp Glu Asp Asp Trp Asp Glu Glu
 355 360 365
 Asp Asp Trp
 370

<210> 93

<211> 1000

<212> DNA

<213> Mycobacterium tuberculosis

<400> 93

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 tgggtgcatg cgttgacgag aatcaacctg ggctgtgcac ccgacgagaa gtacgagctg 180
 gacctgcacg ctgcagtcgc ccgcaatccc cgcgggtcgt atcagatcgc cgtcgtcgtg 240
 ctcaaagggtg gggctggcaa aaccacgctg acagcagcgt tgggggtcgac gttgggtcag 300
 gtgcggggccg accggatcct ggctctagac gcggatccag gcgccggaaa cctcgccgat 360
 cgggtagggc gacaatcggg cgcgaccatc gctgatgtgc ttgcagaaaa agagctgtcg 420
 cactacaacg acatccgcgc acacactagc gtcaatgcgg tcaatctgga agtgctgccg 480

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gcaccggaat acagctcggc gcagcgcgcg ctcagcgcgc ccgactggca tttcatcgcc 540
gatcctgcgt cgaggtttta caacctcgtc ttggctgatt gtggggccgg cttcttcgac 600
ccgctgaccc gcggcggtgct gtccacgggtg tccgggtgctg tggtcgtggc aagtgtctca 660
atcgacggcg cacaacaggc gtcggtcgcg ttggactggg tgcgcaacaa cggttaccaa 720
gatttggcga gccgcgcatg cgtggtcatc aatcacatca tgccgggaga acccaatgtc 780
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atgccgtggg acaggcacat tgcggccgga accgagattt cactcgactt gctcgaccct 900
atctacaagc gcaaggtcct cgaattggcc gcagcgctat ccgacgattt cgagaggggt 960
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<210> 94

<211> 308

<212> PRT

<213> Mycobacterium tuberculosis

<400> 94

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Met Lys Lys Val Lys Pro Gln Lys Pro Lys Ala Thr Lys Pro Pro Lys
  1              5              10              15

```

```

Val Val Ser Gln Arg Gly Trp Arg His Trp Val His Ala Leu Thr Arg
      20              25              30

```

```

Ile Asn Leu Gly Leu Ser Pro Asp Glu Lys Tyr Glu Leu Asp Leu His
      35              40              45

```

```

Ala Arg Val Arg Arg Asn Pro Arg Gly Ser Tyr Gln Ile Ala Val Val
      50              55              60

```

```

Gly Leu Lys Gly Gly Ala Gly Lys Thr Thr Leu Thr Ala Ala Leu Gly
      65              70              75              80

```

```

Ser Thr Leu Ala Gln Val Arg Ala Asp Arg Ile Leu Ala Leu Asp Ala
      85              90              95

```

```

Asp Pro Gly Ala Gly Asn Leu Ala Asp Arg Val Gly Arg Gln Ser Gly
      100             105             110

```

```

Ala Thr Ile Ala Asp Val Leu Ala Glu Lys Glu Leu Ser His Tyr Asn
      115             120             125

```

```

Asp Ile Arg Ala His Thr Ser Val Asn Ala Val Asn Leu Glu Val Leu
      130             135             140

```

```

Pro Ala Pro Glu Tyr Ser Ser Ala Gln Arg Ala Leu Ser Asp Ala Asp
      145             150             155             160

```

```

Trp His Phe Ile Ala Asp Pro Ala Ser Arg Phe Tyr Asn Leu Val Leu
      165             170             175

```

```

Ala Asp Cys Gly Ala Gly Phe Phe Asp Pro Leu Thr Arg Gly Val Leu
      180             185             190

```

```

Ser Thr Val Ser Gly Val Val Val Val Ala Ser Val Ser Ile Asp Gly
      195             200             205

```

```

Ala Gln Gln Ala Ser Val Ala Leu Asp Trp Leu Arg Asn Asn Gly Tyr
      210             215             220

```

Gln Asp Leu Ala Ser Arg Ala Cys Val Val Ile Asn His Ile Met Pro
 225 230 235 240
 Gly Glu Pro Asn Val Ala Val Lys Asp Leu Val Arg His Phe Glu Gln
 245 250 255
 Gln Val Gln Pro Gly Arg Val Val Val Met Pro Trp Asp Arg His Ile
 260 265 270
 Ala Ala Gly Thr Glu Ile Ser Leu Asp Leu Leu Asp Pro Ile Tyr Lys
 275 280 285
 Arg Lys Val Leu Glu Leu Ala Ala Ala Leu Ser Asp Asp Phe Glu Arg
 290 295 300
 Ala Gly Arg Arg
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 <213> Mycobacterium tuberculosis

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<400> 96
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<400> 97
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<400> 102 ccccgccagg gaactagagg cggc	24
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cgcgctcgagc catggtagg cgag	25
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gaggaagatc tatgacaact tcacccgacc cg	32
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catgaagcca tggcccgcag gctgcatg	28
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ggccgagatc tgtgaccac tatgacgtcg tcg	33
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ggcgcccacg gtcagaaatt gatcatgtgg ccaacc	36
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ccgggagatc tatggcaaag ctctccaccg acg	33
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cgctgggcag agctacttga cggtgacggt gg	32
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ggcccagatc tatggccatt gaggtttcgg tgttgc	36

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 <213> Mycobacterium tuberculosis

 <400> 114
 cgccgtgttg catggcagcg ctgagc 26

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 <400> 115
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 <210> 116
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 <400> 116
 cagcacgaac gcgccgtcga tggc 24

 <210> 117
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 <400> 117
 acagatctgt gacggacatg aacccg 26

 <210> 118
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 <400> 118
 ttttccatgg tcacgggccc ccggtact 28

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 <400> 119
 acagatctgt gcccatggca cagata 26

 <210> 120
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 <400> 120
 tttaagcttc taggcgccc gcgcggc 27


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<210> 121
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<212> DNA
<213> Mycobacterium tuberculosis

<400> 121
acagatctgc gcatgcggat ccgtgt                26

<210> 122
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<213> Mycobacterium tuberculosis

<400> 122
ttttccatgg tcatccggcg tgatcgag                28

<210> 123
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<400> 123
acagatctgt aatggcagac tgtgat                26

<210> 124
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<400> 124
ttttccatgg tcaggagatg gtgatcga                28

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<400> 125
acagatctgc cggctacccc ggtgcc                26

<210> 126
<211> 28
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<213> Mycobacterium tuberculosis

<400> 126
ttttccatgg ctattgcagc tttccggc                28

<210> 127
<211> 50
<212> PRT
<213> Mycobacterium tuberculosis

<400> 127
Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val
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Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu
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Glu Ser Met Tyr Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr
35 40 45

Val Ser
50

<210> 128

<211> 49

<212> PRT

<213> Mycobacterium tuberculosis

<400> 128

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu
20 25 30

Glu Ser Met Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr Val
35 40 45

Ser

<210> 129

<211> 50

<212> PRT

<213> Mycobacterium tuberculosis

<400> 129

Ala Glu Asp Val Arg Ala Glu Ile Val Ala Ser Val Leu Glu Val Val
1 5 10 15

Val Asn Glu Gly Asp Gln Ile Asp Lys Gly Asp Val Val Val Leu Leu
20 25 30

Glu Ser Met Lys Met Glu Ile Pro Val Leu Ala Glu Ala Ala Gly Thr
35 40 45

Val Ser
50

<210> 130

<211> 33

<212> DNA

<213> Mycobacterium tuberculosis

<400> 130

ccgggagatc tatggcaaag ctctccaccg acg

33

<210> 131

<211> 32
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 131
 cgctgggcag agctacttga cggtgacggt gg 32

<210> 132
 <211> 36
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 132
 ggcgccggca agcttgccat gacagagcag cagtgg 36

<210> 133
 <211> 26
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 133
 cgaactcgcc ggatcccgtg tttcgc 26

<210> 134
 <211> 32
 <212> DNA
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<400> 134
 ggcaaccgcg agatctttct cccggccggg gc 32

<210> 135
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 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 135
 ggcaagcttg ccggcgccta acgaact 27

<210> 136
 <211> 30
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 136
 ggacccagat ctatgacaga gcagcagtgg 30

<210> 137
 <211> 47
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 137
 ccggcagccc cggccgggag aaaagctttg cgaacatccc agtgacg 47

<210> 138
 <211> 44

<212> DNA
<213> Mycobacterium tuberculosis

<400> 138
gttcgcaaag cttttctccc ggccggggct gccggtcgag tacc 44

<210> 139
<211> 20
<212> DNA
<213> Mycobacterium tuberculosis

<400> 139
ccttcggtgg atcccgtcag 20

<210> 140
<211> 450
<212> DNA
<213> Mycobacterium tuberculosis

<400> 140
tggcgctgtc accgaggaac ctgtcaatgt cgtcgagcag tactgaaccg ttccgagaaa 60
ggccagcatg aacgtcaccg tatccattcc gaccatcctg cggccccaca ccggcggcca 120
gaagagtgtc tcggccagcg gcgatacctt gggtgccgtc atcagcgacc tggaggccaa 180
ctattcgggc atttccgagc gcctgatgga cccgtcttcc ccaggtaagt tgcaccgctt 240
cgtgaacatc tacgtcaacg acgaggacgt gcggttctcc ggcggttgg ccaccgcgat 300
cgctgacggt gactcgtca ccacccctcc cgccgtggcc ggtgggtgag cggagcacat 360
gacacgatac gactcgtgt tgcaggcctt gggcaacacg ccgctggttg gcctgcagcg 420
attgtcgcca cgctgggatg acgggcgaga 450

<210> 141
<211> 93
<212> PRT
<213> Mycobacterium tuberculosis

<400> 141
Met Asn Val Thr Val Ser Ile Pro Thr Ile Leu Arg Pro His Thr Gly
1 5 10 15
Gly Gln Lys Ser Val Ser Ala Ser Gly Asp Thr Leu Gly Ala Val Ile
20 25 30
Ser Asp Leu Glu Ala Asn Tyr Ser Gly Ile Ser Glu Arg Leu Met Asp
35 40 45
Pro Ser Ser Pro Gly Lys Leu His Arg Phe Val Asn Ile Tyr Val Asn
50 55 60
Asp Glu Asp Val Arg Phe Ser Gly Gly Leu Ala Thr Ala Ile Ala Asp
65 70 75 80
Gly Asp Ser Val Thr Ile Leu Pro Ala Val Ala Gly Gly
85 90

<210> 142
<211> 480
<212> DNA

<213> Mycobacterium tuberculosis

<400> 142

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ggtgttcccg cggccgggcta tgacaacagt caatgtgcat gacaagttac aggtattagg 60
tccaggttca acaaggagac aggcaacatg gcaacacgtt ttatgacgga tccgcacgcg 120
atgcgggaca tggcggggccg ttttgagggt cacgcccaga cgggtggagga cgaggctcgc 180
cggatgtggg cgtccgcgca aaacatctcg ggcgcgggct ggagtggcat ggccgaggcg 240
acctcgctag acaccatggc ccagatgaat caggcgtttc gcaacatcgt gaacatgctg 300
cacgggggtg gtgacgggct ggttcgcgac gccaacaact acgagcagca agagcaggcc 360
tcccagcaga tcctcagcag ctaacgtcag ccgctgcagc acaatacttt tacaagcgaa 420
ggagaacagg ttcgatgacc atcaactatc agttcgggtg tgtcgacgct catggcgcca 480
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<210> 143

<211> 98

<212> PRT

<213> Mycobacterium tuberculosis

<400> 143

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Met Ala Thr Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala
  1              5              10             15

Gly Arg Phe Glu Val His Ala Gln Thr Val Glu Asp Glu Ala Arg Arg
      20              25             30

Met Trp Ala Ser Ala Gln Asn Ile Ser Gly Ala Gly Trp Ser Gly Met
      35              40             45

Ala Glu Ala Thr Ser Leu Asp Thr Met Ala Gln Met Asn Gln Ala Phe
      50              55             60

Arg Asn Ile Val Asn Met Leu His Gly Val Arg Asp Gly Leu Val Arg
      65              70             75             80

Asp Ala Asn Asn Tyr Glu Gln Gln Glu Gln Ala Ser Gln Gln Ile Leu
      85              90             95

Ser Ser
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<210> 144

<211> 940

<212> DNA

<213> Mycobacterium tuberculosis

<400> 144

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tccgccacct aacgaaagga tgatcatgcc caagagaagc gaatacaggc aaggcacgcc 120
gaactgggtc gaccttcaga ccaccgatca gtccgccgcc aaaaagttct acacatcggt 180
gttcggctgg ggttacgacg acaaccgggt ccccgaggcg ggtgggggtct attccatggc 240
cacgctgaac ggcgaagccg tggccgccat cgcaccgatg ccccggggtg caccggaggg 300
gatgccgccg atctggaaca cctatatcgc ggtggacgac gtcgatgcgg tgggtggaaa 360
ggtggtgccc gggggcgggc aggtgatgat gccggccttc gacatcggcg atgccggccg 420
gatgtcgctt atcaccgatc cgaccggcgc tgccgtgggc ctatggcagg ccaatcggca 480
catcggagcg acgttggtca acgagacggg cacgctcatc tggaacgaac tgctcacgga 540
caagccggat ttggcgctag cgttctacga ggctgtgggt ggccctaccc actcgagcat 600
ggagatagct gcggggccaga actatcgggt gctcaaggcc gccgacgcgg aagtcggcgg 660
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ctgtatggaa cgcgcgatgc ccggcgtgcc gaatcattgg cacgtctact ttgcggtgga 720
tgacgccgac gccacggcgg ccaaagccgc cgcagcgggc ggccagggtca ttgcggaacc 780
ggctgacatt ccgtcgggtg gccgggttcgc cgtgttgtcc gatccgcagg gcgcgatctt 840
cagtgtgttg aagcccgcac cgcagcaata gggagcatcc cgggcaggcc cgccggccgg 900
cagattcgga gaatgctaga agctgccgcc ggcgcgcccg 940

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<210> 145

<211> 261

<212> PRT

<213> Mycobacterium tuberculosis

<400> 145

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Met Pro Lys Arg Ser Glu Tyr Arg Gln Gly Thr Pro Asn Trp Val Asp
  1              5              10              15

Leu Gln Thr Thr Asp Gln Ser Ala Ala Lys Lys Phe Tyr Thr Ser Leu
      20              25              30

Phe Gly Trp Gly Tyr Asp Asp Asn Pro Val Pro Gly Gly Gly Gly Val
      35              40              45

Tyr Ser Met Ala Thr Leu Asn Gly Glu Ala Val Ala Ala Ile Ala Pro
      50              55              60

Met Pro Pro Gly Ala Pro Glu Gly Met Pro Pro Ile Trp Asn Thr Tyr
      65              70              75              80

Ile Ala Val Asp Asp Val Asp Ala Val Val Asp Lys Val Val Pro Gly
      85              90              95

Gly Gly Gln Val Met Met Pro Ala Phe Asp Ile Gly Asp Ala Gly Arg
      100             105             110

Met Ser Phe Ile Thr Asp Pro Thr Gly Ala Ala Val Gly Leu Trp Gln
      115             120             125

Ala Asn Arg His Ile Gly Ala Thr Leu Val Asn Glu Thr Gly Thr Leu
      130             135             140

Ile Trp Asn Glu Leu Leu Thr Asp Lys Pro Asp Leu Ala Leu Ala Phe
      145             150             155             160

Tyr Glu Ala Val Val Gly Leu Thr His Ser Ser Met Glu Ile Ala Ala
      165             170             175

Gly Gln Asn Tyr Arg Val Leu Lys Ala Gly Asp Ala Glu Val Gly Gly
      180             185             190

Cys Met Glu Pro Pro Met Pro Gly Val Pro Asn His Trp His Val Tyr
      195             200             205

Phe Ala Val Asp Asp Ala Asp Ala Thr Ala Ala Lys Ala Ala Ala Ala
      210             215             220

Gly Gly Gln Val Ile Ala Glu Pro Ala Asp Ile Pro Ser Val Gly Arg
      225             230             235             240

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Phe Ala Val Leu Ser Asp Pro Gln Gly Ala Ile Phe Ser Val Leu Lys
 245 250 255

Pro Ala Pro Gln Gln
 260

<210> 146
 <211> 280
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 146
 ccgaaaggcg gtgcaccgca cccagaagaa aaggaaagat cgagaaatgc cacagggaac 60
 tgtgaagtgg ttcaacgcgg agaaggggtt cggctttatc gccccgaag acggttccgc 120
 ggatgtattt gtccactaca cggagatcca gggaacgggc ttccgcaccc ttgaagaaaa 180
 ccagaaggtc gagttcgaga tcggccacag ccctaagggc cccagggcca ccggagtccg 240
 ctcgctctga gttacccccg cgagcagacg caaaaagccc 280

<210> 147
 <211> 67
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 147
 Met Pro Gln Gly Thr Val Lys Trp Phe Asn Ala Glu Lys Gly Phe Gly
 1 5 10 15

Phe Ile Ala Pro Glu Asp Gly Ser Ala Asp Val Phe Val His Tyr Thr
 20 25 30

Glu Ile Gln Gly Thr Gly Phe Arg Thr Leu Glu Glu Asn Gln Lys Val
 35 40 45

Glu Phe Glu Ile Gly His Ser Pro Lys Gly Pro Gln Ala Thr Gly Val
 50 55 60

Arg Ser Leu
 65

<210> 148
 <211> 540
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 148
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 acttcgtgtc ccaaatgtga cgaccatgga ccaaggttcc tgagatgaac ctacggcgcc 120
 atcagaccct gacgtgcga ctgctggcgg catccgcggg cattctcagc gccgcggcct 180
 tcgccgcgcc agcacaggca aaccccgctc acgacgcgtt catcgccgcg ctgaacaatg 240
 ccggcgtaaa ctacggcgat ccggtcgacg ccaaagcgct gggtcagtcc gtctgcccga 300
 tcctggccga gcccgcgggg tcgtttaaca ccgcggtagc cagcgttggt gcgcgcgccc 360
 aaggcatgtc ccaggacatg gcgcaaacct tcaccagtat cgcgatttcg atgtactgcc 420
 cctcggtgat ggcagacgtc gccagcggca acctgccggc cctgccagac atgccggggc 480
 tgcccgggtc ctaggcgtgc gcggctccta gccggtccct aacggatcga tcgtggatgc 540

<210> 149
 <211> 129
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 149
 Met Asn Leu Arg Arg His Gln Thr Leu Thr Leu Arg Leu Leu Ala Ala
 1 5 10 15
 Ser Ala Gly Ile Leu Ser Ala Ala Ala Phe Ala Ala Pro Ala Gln Ala
 20 25 30
 Asn Pro Val Asp Asp Ala Phe Ile Ala Ala Leu Asn Asn Ala Gly Val
 35 40 45
 Asn Tyr Gly Asp Pro Val Asp Ala Lys Ala Leu Gly Gln Ser Val Cys
 50 55 60
 Pro Ile Leu Ala Glu Pro Gly Gly Ser Phe Asn Thr Ala Val Ala Ser
 65 70 75 80
 Val Val Ala Arg Ala Gln Gly Met Ser Gln Asp Met Ala Gln Thr Phe
 85 90 95
 Thr Ser Ile Ala Ile Ser Met Tyr Cys Pro Ser Val Met Ala Asp Val
 100 105 110
 Ala Ser Gly Asn Leu Pro Ala Leu Pro Asp Met Pro Gly Leu Pro Gly
 115 120 125
 Ser

<210> 150
 <211> 400
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 150
 atagtttggg gaaggtgtcc ataaatgagg ctgtcgttga ccgcattgag cgccggtgta 60
 ggcgccgtgg caatgtcgtt gaccgtcggg gccggggtcg cctccgcaga tcccgtggac 120
 gcggtcatta acaccacctg caattacggg caggtagtag ctgcgtcaa cgcgacggat 180
 ccgggggctg ccgcacagtt caacgcctca ccggtggcgc agtcctattt gcgcaatttc 240
 ctgcgcgac cgccacctca gcgcgctgcc atggccgcgc aattgcaagc tgtgccgggg 300
 gcggcacagt acatcggcct tgtcgagtcg gttgccggct cctgcaacaa ctattaagcc 360
 catgcggggc ccatcccgcg acccggcatc gtcgccgggg 400

<210> 151
 <211> 110
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 151
 Met Arg Leu Ser Leu Thr Ala Leu Ser Ala Gly Val Gly Ala Val Ala
 1 5 10 15

Met Ser Leu Thr Val Gly Ala Gly Val Ala Ser Ala Asp Pro Val Asp
20 25 30

Ala Val Ile Asn Thr Thr Cys Asn Tyr Gly Gln Val Val Ala Ala Leu
35 40 45

Asn Ala Thr Asp Pro Gly Ala Ala Ala Gln Phe Asn Ala Ser Pro Val
50 55 60

Ala Gln Ser Tyr Leu Arg Asn Phe Leu Ala Ala Pro Pro Pro Gln Arg
65 70 75 80

Ala Ala Met Ala Ala Gln Leu Gln Ala Val Pro Gly Ala Ala Gln Tyr
85 90 95

Ile Gly Leu Val Glu Ser Val Ala Gly Ser Cys Asn Asn Tyr
100 105 110

<210> 152
<211> 990
<212> DNA
<213> Mycobacterium tuberculosis

<400> 152
aatagtaata tcgctgtgctg gttgcaaaac gtgtgaccga gggtccgcag tcgagcgctg 60
cgggcccgcct tcgaggagga cgaaccacag tcatgacgaa catcgtgggtc ctgatcaagc 120
aggtcccaga tacctggctg gagcgcaagc tgaccgacgg cgatttcacg ctggaccgcg 180
aggccgccga cgcggtgctg gacgagatca acgagcgcg cgtggaggaa gcgctacaga 240
ttcgggagaa agaggccgcc gacggcatcg aagggtcggt aaccgtgctg acggcggggc 300
ccgagcgcg caccgaggcg atccgcaagg cgctgtcgat ggggtgccgac aaggccgtcc 360
acctaaagga cgacggcatg cacggctcgg acgtcatcca aaccgggtgg gctttggcgc 420
gcgcgttggg caccatcgag ggcaccgagc tggatgatcg aggcaacgaa tcgaccgacg 480
gggtgggcgg tgcggtgccg gccatcatcg ccgagtacct gggcctgccg cagctcacc 540
acctgcgcaa agtgtcgatc gagggcggca agatcaccgg cgagcgtgag accgatgagg 600
gcgtattcac cctcgaggcc acgtgccc cgtgatcag cgtgaacgag aagatcaacg 660
agccgcgctt cccgtccttc aaaggcatca tggccgcaa gaagaaggaa gttaccgtgc 720
tgaccctggc cgagatcggg gtcgagagcg acgaggtggg gctggccaac gccggatcca 780
ccgtgtctggc gtcgacgccc aaaccggcca agactgccgg ggagaagggtc accgacgagg 840
gtgaaggcgg caaccagatc gtgcagtacc tggttgccc gaaaatcatc taagacatac 900
gcacctccca aagacgagag cgatataacc catggctgaa gtactgggtc tcgttgagca 960
cgctgaaggc gcgttaaaga aggtcagcgc 990

<210> 153
<211> 266
<212> PRT
<213> Mycobacterium tuberculosis

<400> 153
Met Thr Asn Ile Val Val Leu Ile Lys Gln Val Pro Asp Thr Trp Ser
1 5 10 15

Glu Arg Lys Leu Thr Asp Gly Asp Phe Thr Leu Asp Arg Glu Ala Ala
20 25 30

Asp Ala Val Leu Asp Glu Ile Asn Glu Arg Ala Val Glu Glu Ala Leu
35 40 45

Gln Ile Arg Glu Lys Glu Ala Ala Asp Gly Ile Glu Gly Ser Val Thr
 50 55 60
 Val Leu Thr Ala Gly Pro Glu Arg Ala Thr Glu Ala Ile Arg Lys Ala
 65 70 75 80
 Leu Ser Met Gly Ala Asp Lys Ala Val His Leu Lys Asp Asp Gly Met
 85 90 95
 His Gly Ser Asp Val Ile Gln Thr Gly Trp Ala Leu Ala Arg Ala Leu
 100 105 110
 Gly Thr Ile Glu Gly Thr Glu Leu Val Ile Ala Gly Asn Glu Ser Thr
 115 120 125
 Asp Gly Val Gly Gly Ala Val Pro Ala Ile Ile Ala Glu Tyr Leu Gly
 130 135 140
 Leu Pro Gln Leu Thr His Leu Arg Lys Val Ser Ile Glu Gly Gly Lys
 145 150 155 160
 Ile Thr Gly Glu Arg Glu Thr Asp Glu Gly Val Phe Thr Leu Glu Ala
 165 170 175
 Thr Leu Pro Ala Val Ile Ser Val Asn Glu Lys Ile Asn Glu Pro Arg
 180 185 190
 Phe Pro Ser Phe Lys Gly Ile Met Ala Ala Lys Lys Lys Glu Val Thr
 195 200 205
 Val Leu Thr Leu Ala Glu Ile Gly Val Glu Ser Asp Glu Val Gly Leu
 210 215 220
 Ala Asn Ala Gly Ser Thr Val Leu Ala Ser Thr Pro Lys Pro Ala Lys
 225 230 235 240
 Thr Ala Gly Glu Lys Val Thr Asp Glu Gly Glu Gly Gly Asn Gln Ile
 245 250 255
 Val Gln Tyr Leu Val Ala Gln Lys Ile Ile
 260 265

<210> 154
 <211> 25
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 154
 ctgagatcta tgaacctacg gcgcc

25

<210> 155
 <211> 35
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 155 ctcccatggt accctaggac ccgggcagcc ccggc	35
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<400> 157 ctccccgggc ttaatagttg ttgcaggagc	30
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<400> 158 gcttagatct atgattttct gggcaaccag gta	33
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<400> 161 tctccccgggg gtaactcaga gcgagcggac	30
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<400> 162	

ctgagatcta tgaacgtcac cgtatcc 27

<210> 163

<211> 27

<212> DNA

<213> Mycobacterium tuberculosis

<400> 163

tctcccgggg ctcacccacc ggccacg 27

<210> 164

<211> 30

<212> DNA

<213> Mycobacterium tuberculosis

<400> 164

ctgagatcta tggcaacacg ttttatgacg 30

<210> 165

<211> 30

<212> DNA

<213> Mycobacterium tuberculosis

<400> 165

ctccccgggt tagctgctga ggatctgcth 30

<210> 166

<211> 31

<212> DNA

<213> Mycobacterium tuberculosis

<400> 166

ctgaagatct atgcccaaga gaagcgaata c 31

<210> 167

<211> 31

<212> DNA

<213> Mycobacterium tuberculosis

<400> 167

cggcagctgc tagcattctc cgaatctgcc g 31

<210> 168

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 168

Pro Gln Gly Thr Val Lys Trp Phe Asn Ala Glu Lys Gly Phe Gly

1

5

10

15

<210> 169

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<220>
<221> UNSURE
<222> (15)
<223> Xaa is unknown

<400> 169
Asn Val Thr Val Ser Ile Pro Thr Ile Leu Arg Pro Xaa Xaa Xaa
1 5 10 15

<210> 170
<211> 15
<212> PRT
<213> Mycobacterium tuberculosis

<220>
<221> VARIANT
<222> (1)
<223> Thr could also be Ala

<400> 170
Thr Arg Phe Met Thr Asp Pro His Ala Met Arg Asp Met Ala Gly
1 5 10 15

<210> 171
<211> 15
<212> PRT
<213> Mycobacterium tuberculosis

<400> 171
Pro Lys Arg Ser Glu Tyr Arg Gln Gly Thr Pro Asn Trp Val Asp
1 5 10 15

<210> 172
<211> 404
<212> PRT
<213> Mycobacterium tuberculosis

<400> 172
Met Ala Thr Val Asn Arg Ser Arg His His His His His His His
1 5 10 15

Ile Glu Gly Arg Ser Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr Leu
20 25 30

Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe Gln
35 40 45

Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp Gly Leu Arg
50 55 60

Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro Ala Phe Glu
65 70 75 80

Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val Gly Gly Gln

85										90					95						
Ser	Ser	Phe	Tyr	Ser	Asp	Trp	Tyr	Ser	Pro	Ala	Cys	Gly	Lys	Ala	Gly						
			100					105					110								
Cys	Gln	Thr	Tyr	Lys	Trp	Glu	Thr	Phe	Leu	Thr	Ser	Glu	Leu	Pro	Gln						
		115					120					125									
Trp	Leu	Ser	Ala	Asn	Arg	Ala	Val	Lys	Pro	Thr	Gly	Ser	Ala	Ala	Ile						
						135					140										
Gly	Leu	Ser	Met	Ala	Gly	Ser	Ser	Ala	Met	Ile	Leu	Ala	Ala	Tyr	His						
145					150					155					160						
Pro	Gln	Gln	Phe	Ile	Tyr	Ala	Gly	Ser	Leu	Ser	Ala	Leu	Leu	Asp	Pro						
				165					170					175							
Ser	Gln	Gly	Met	Gly	Pro	Ser	Leu	Ile	Gly	Leu	Ala	Met	Gly	Asp	Ala						
			180					185					190								
Gly	Gly	Tyr	Lys	Ala	Ala	Asp	Met	Trp	Gly	Pro	Ser	Ser	Asp	Pro	Ala						
		195					200						205								
Trp	Glu	Arg	Asn	Asp	Pro	Thr	Gln	Gln	Ile	Pro	Lys	Leu	Val	Ala	Asn						
	210					215					220										
Asn	Thr	Arg	Leu	Trp	Val	Tyr	Cys	Gly	Asn	Gly	Thr	Pro	Asn	Glu	Leu						
225					230					235					240						
Gly	Gly	Ala	Asn	Ile	Pro	Ala	Glu	Phe	Leu	Glu	Asn	Phe	Val	Arg	Ser						
			245						250					255							
Ser	Asn	Leu	Lys	Phe	Gln	Asp	Ala	Tyr	Asn	Ala	Ala	Gly	Gly	His	Asn						
			260					265					270								
Ala	Val	Phe	Asn	Phe	Pro	Pro	Asn	Gly	Thr	His	Ser	Trp	Glu	Tyr	Trp						
		275					280						285								
Gly	Ala	Gln	Leu	Asn	Ala	Met	Lys	Gly	Asp	Leu	Gln	Ser	Ser	Leu	Gly						
	290					295					300										
Ala	Gly	Lys	Leu	Ala	Met	Thr	Glu	Gln	Gln	Trp	Asn	Phe	Ala	Gly	Ile						
305					310					315					320						
Glu	Ala	Ala	Ala	Ser	Ala	Ile	Gln	Gly	Asn	Val	Thr	Ser	Ile	His	Ser						
				325					330					335							
Leu	Leu	Asp	Glu	Gly	Lys	Gln	Ser	Leu	Thr	Lys	Leu	Ala	Ala	Ala	Trp						
			340					345					350								
Gly	Gly	Ser	Gly	Ser	Glu	Ala	Tyr	Gln	Gly	Val	Gln	Gln	Lys	Trp	Asp						
		355					360					365									
Ala	Thr	Ala	Thr	Glu	Leu	Asn	Asn	Ala	Leu	Gln	Asn	Leu	Ala	Arg	Thr						
	370					375					380										
Ile	Ser	Glu	Ala	Gly	Gln	Ala	Met	Ala	Ser	Thr	Glu	Gly	Asn	Val	Thr						

385 390 395 400

Gly Met Phe Ala

<210> 173

<211> 403

<212> PRT

<213> Mycobacterium tuberculosis

<400> 173

Met Ala Thr Val Asn Arg Ser Arg His His His His His His His His
1 5 10 15

Ile Glu Gly Arg Ser Met Thr Glu Gln Gln Trp Asn Phe Ala Gly Ile
20 25 30

Glu Ala Ala Ala Ser Ala Ile Gln Gly Asn Val Thr Ser Ile His Ser
35 40 45

Leu Leu Asp Glu Gly Lys Gln Ser Leu Thr Lys Leu Ala Ala Ala Trp
50 55 60

Gly Gly Ser Gly Ser Glu Ala Tyr Gln Gly Val Gln Gln Lys Trp Asp
65 70 75 80

Ala Thr Ala Thr Glu Leu Asn Asn Ala Leu Gln Asn Leu Ala Arg Thr
85 90 95

Ile Ser Glu Ala Gly Gln Ala Met Ala Ser Thr Glu Gly Asn Val Thr
100 105 110

Gly Met Phe Ala Lys Leu Phe Ser Arg Pro Gly Leu Pro Val Glu Tyr
115 120 125

Leu Gln Val Pro Ser Pro Ser Met Gly Arg Asp Ile Lys Val Gln Phe
130 135 140

Gln Ser Gly Gly Asn Asn Ser Pro Ala Val Tyr Leu Leu Asp Gly Leu
145 150 155 160

Arg Ala Gln Asp Asp Tyr Asn Gly Trp Asp Ile Asn Thr Pro Ala Phe
165 170 175

Glu Trp Tyr Tyr Gln Ser Gly Leu Ser Ile Val Met Pro Val Gly Gly
180 185 190

Gln Ser Ser Phe Tyr Ser Asp Trp Tyr Ser Pro Ala Cys Gly Lys Ala
195 200 205

Gly Cys Gln Thr Tyr Lys Trp Glu Thr Phe Leu Thr Ser Glu Leu Pro
210 215 220

Gln Trp Leu Ser Ala Asn Arg Ala Val Lys Pro Thr Gly Ser Ala Ala
225 230 235 240

Ile	Gly	Leu	Ser	Met	Ala	Gly	Ser	Ser	Ala	Met	Ile	Leu	Ala	Ala	Tyr	245	250	255
His	Pro	Gln	Gln	Phe	Ile	Tyr	Ala	Gly	Ser	Leu	Ser	Ala	Leu	Leu	Asp	260	265	270
Pro	Ser	Gln	Gly	Met	Gly	Pro	Ser	Leu	Ile	Gly	Leu	Ala	Met	Gly	Asp	275	280	285
Ala	Gly	Gly	Tyr	Lys	Ala	Ala	Asp	Met	Trp	Gly	Pro	Ser	Ser	Asp	Pro	290	295	300
Ala	Trp	Glu	Arg	Asn	Asp	Pro	Thr	Gln	Gln	Ile	Pro	Lys	Leu	Val	Ala	305	310	315
Asn	Asn	Thr	Arg	Leu	Trp	Val	Tyr	Cys	Gly	Asn	Gly	Thr	Pro	Asn	Glu	325	330	335
Leu	Gly	Gly	Ala	Asn	Ile	Pro	Ala	Glu	Phe	Leu	Glu	Asn	Phe	Val	Arg	340	345	350
Ser	Ser	Asn	Leu	Lys	Phe	Gln	Asp	Ala	Tyr	Asn	Ala	Ala	Gly	Gly	His	355	360	365
Asn	Ala	Val	Phe	Asn	Phe	Pro	Pro	Asn	Gly	Thr	His	Ser	Trp	Glu	Tyr	370	375	380
Trp	Gly	Ala	Gln	Leu	Asn	Ala	Met	Lys	Gly	Asp	Leu	Gln	Ser	Ser	Leu	385	390	395
Gly	Ala	Gly																